

September 2, 1957

Volume 141 No. 10

METALWORKING OUTLOOK



81 Labor experts' consensus: Walter Reuther lost more than he gained in price proposal to auto companies

87 Transition in integral motors: Producers' marketing and cost problems mirror metalworking's two major difficulties

88 Boats ride outboard boom as leisure markets for metals expand

89 Zirconium sponge producers boost capacity as AEC places large orders

90 Caterpillar Tractor Co. builds 500,000 sq-ft industrial engine plant

91 Copperweld eyes Superior—merger would increase diversification

92 Planes use metallic fuels for better performance and longer ranges

93 Uranium concentrate production grows as more mills are added

97 Hobart produces rutile with a constant flow separator



98 Are engineers really scarce?—not if better used

99 Servel to sell out—will seek greener fields

115 Harbison-Walker expands facilities for study of refractory materials

TECHNICAL OUTLOOK

129 Copper in cold-finished steel ups machinability by 10 per cent, says La Salle Steel Co.

130 Press stretches parts to form wing root

COVER ARTICLE

131 Production Ideas Series No. 14—Spinning keeps pace with new technology

135 Furnace slides to work after offsite construction

136 Machine does a variety of jobs because of its flexibility

138 Progress in Steelmaking—Mechanization cuts slab grinding costs

146 Skewback twist is eliminated with a compensating device

148 Ore car handling eased as radar sensitizes retarding system

150 Faster CO₂ Cores stem from the use of a vacuum gasser



158 New ways to fight corrosion—Part II deals with coatings

MARKET OUTLOOK

181 Steel production sets record—Indexes and composites, 191; steel prices, 193; ores, 199; ferroalloys, 200; scrap trends, 203; prices, 204

183 Bars: No place to go but up

206 Nonferrous metals—Another copper dip looms—Prices, 208

REGULAR FEATURES

6 Behind the Scenes

10 Letters to the Editors

16 Staff

23 Calendar of Meetings

85 The Editor's Views

94 Windows of Washington

101 Mirrors of Motordom

105 The Business Trend

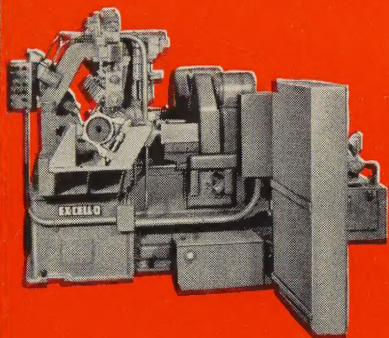
109 Men of Industry

163 New Products

178 New Literature

210 Advertising Index

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behind the scenes



Salute to Toil

This week's STEEL bears the date of Sept. 2, which happens to be Labor Day, and we are not one to let an important date like this slip by unnoticed. A majority of the world's inhabitants are required to earn their bread by the sweat of their brows, so everybody who works for a living is entitled to loosen his belt, take off his shoes, and settle back with a can of beer on Labor Day.

It is startling to consider how recently it was that labor assumed its standing in the civilized world.

The year 1900 is merely a few days away in time, yet the things labor advocated then shocked many governments so severely they summoned police and soldiers to straighten out labor's thinking. Labor delegates meeting in Basel, Switzerland, in 1896 represented Russia, Austria, Germany, France, Holland, Spain, and Italy. After they surmounted the language barrier, they voted (54-4) that landed property should be abolished. Then they briskly passed resolutions opposing standing armies and advocating universal suffrage, legislative protection of labor, nationalization of land, socialization of industry, and the 8-hour day. They repudiated all known anarchists and established themselves as pigeons for their separate governments.

Labor's Gains in U. S.

In America, of course, we could afford to chuckle at the antics of European labor organizers because we were improving the labor picture all the time. Indiana had a statute fixing minimum wages at 15 cents an hour for manual labor, but Nebraska went even farther: The Cornhuskers established an 8-hour day with enforced payment for overtime, but this ridiculous legislation was soon declared unconstitutional. Our southern states got on the bandwagon of progress, too, by 1905: They restricted the labor of children under 10 to 10 hours a day, nor would they permit them to work more than 58 hours a week. And some states, if you please, got so uppity they wouldn't allow women to work in mines.

Some of these reflections were

stirred by the metal spinning story (Page 131) and a private report from the third scrap seminar conducted by the Institute of Scrap Iron & Steel Inc. the week of Aug. 11 at Michigan State University.

The metal spinning deal is No. 1 in STEEL's Production Ideas Series. The article suggests that spinning offers low cost and flexibility unmatched by other metalworking processes. Tooling costs are less, lead time is shorter, design changes can be made easily. Metal spinning was practiced by the ancient Egyptians and they were pretty good at it, too, in spite of the supposition that their products were the result of slave labor. (Labor; see? That's why we thought of Labor Day.)

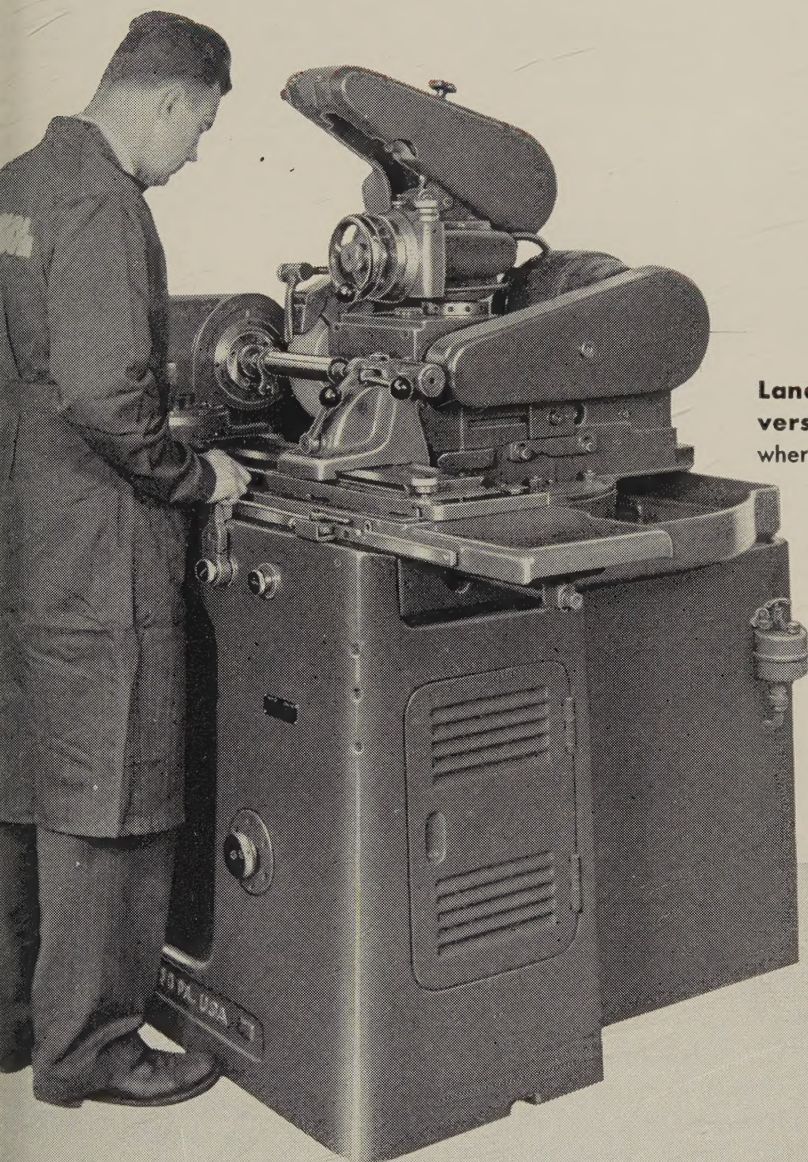
The other item, about the Scrap Institute, came to us directly from Associate Editor Horace (Goat Roast) Sam Samford. Sam attended the seminar, and was exposed to lectures and instruction for a week. He learned about insurance coverage for the scrap industry, safety in the scrapyard, transportation and elements of rate structures, recognition and segregation of alloy scrap, and a lot of dandy things like that.

"But the thought I carried away from that seminar," said Sam, in cents that purely dripped grits and blackeyed peas, "was the high moral tone evident everywhere. The president of the Institute and chairman of the seminar was a gentleman named Herman D. Moskowitz. He talked more moral sense in 5 minutes than a passel of preachers. He told them boys that he knew 80 of his grandfathers and 50 of the fathers of folks at that meeting, and he said they had proved beyond a doubt that the only way to stay in business was to stress quality, honesty, fairness and ethics."

Mr. Moskowitz, Sam concluded, "drew a picture of the way business ought to be conducted, and it seemed to me if everbody operated the way he does, this ol' world would be a most pleasant place to live in. . . . Myself haven't talked so much since Alabama went to the Rose Bowl."

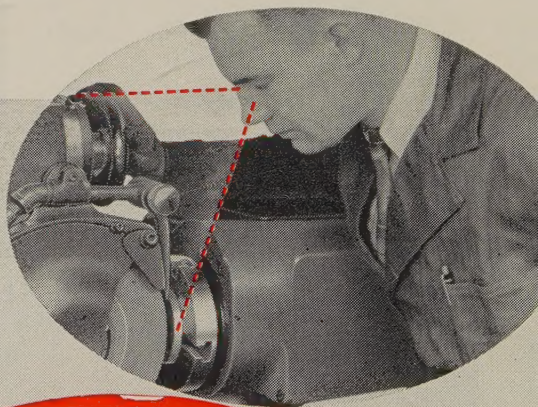
Shred

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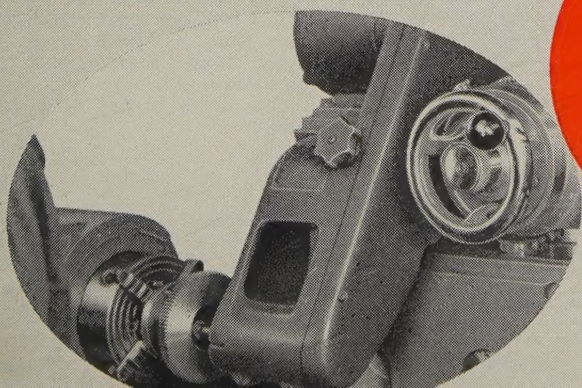


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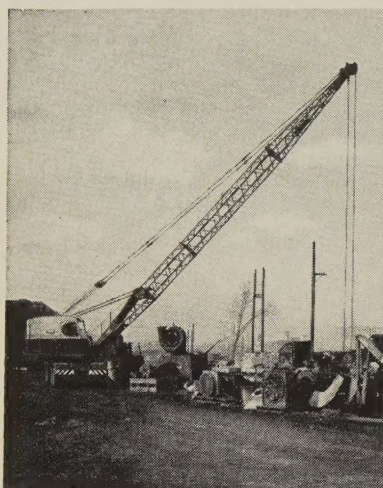


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THREE TYPES of 22-B Cranes Answer THREE Handling Needs

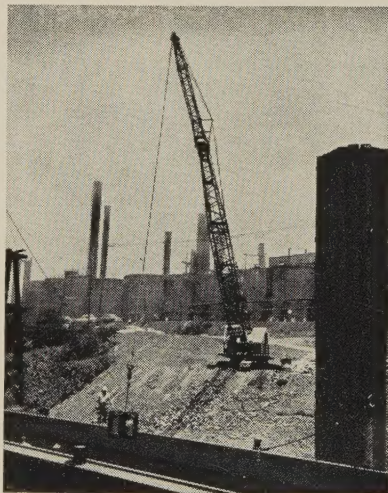


PROBLEM: Crane needed to handle lifting assignments in widely scattered locations; must have good mobility and long reach.

SOLUTION: **Bucyrus-Erie 22-B Transit Crane**, combining heavy-duty features with rubber-tired mobility, handles booms 30 feet (standard) to 80 feet (with removable inserts), has lifting capacity of 25 tons. A Transit Crane moves from job to job fast and, on reaching the job site, is ready to go right to work. Extendible outriggers provide a sturdy foundation.

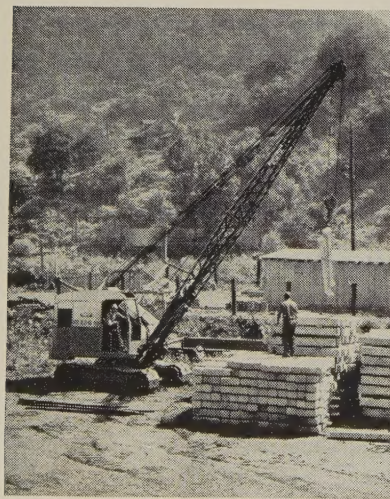
PROBLEM: Crane needed for precision lifting, sometimes in locations where the ground is soft or rough.

SOLUTION: **Bucyrus-Erie Heavy Duty 22-B**, specially designed for jobs that require extra precision and stability, is the answer here. Long, flat crawlers with 30-in. treads keep the machine stable and maneuverable even on soft or uneven terrain. Friction swing brake and power boom hoist with power controlled lowering for the main hoist line permit delicate positioning of loads.



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South Milwaukee, Wisconsin

LETTERS TO THE EDITORS

Secrets Given to Competition

With reference to your Windows of Washington item, "U. S. Gives Away Your Secrets" (July 22, Page 64), a flagrant case of this kind is illustrated in the experience of a St. Louis company following World War I.

According to our recollection of the circumstances, the U. S. Bureau of Standards went into the plant, studied and recorded the processes, and made them available to the world (competition included) at 10 cents per copy.

M. G. Stewart
President
Pelican Supply Co. Inc.
Shreveport, La.

Query on Low Finance Terms

In your Metalworking Outlook column of Aug. 12 (Page 68), you state in the paragraph, "Better Finance Deals Needed," that one finance company requires only 10 per cent down and three years to pay.

This is of great interest in these days of intense competition for capital support. I would appreciate knowing which of the finance companies is doing business this way.

R. E. W. Harrison
President
Harrison Engineering Service
Washington

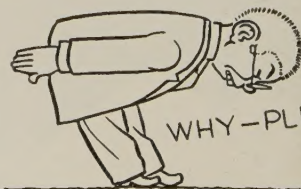
• For information, write: **Foundation for Management Research**, 121 W. Adams St., Chicago 3, Ill.

'Eye Opener' Article

The twelfth article, "Rolls Forge Precision Parts" (July 8, Page 97), in your Production Ideas series is very much an "eye opener." It should draw the attention of forging suppliers. I would appreciate two copies.

K. H. Bradshaw
Forging Buyer
Caterpillar Tractor Co.
Peoria, Ill.

Japanese Checks on Carbon



After reading the market prices for ferrochrome and ferromolybdenum on Page 176 of your June 24 issue, we have some questions:

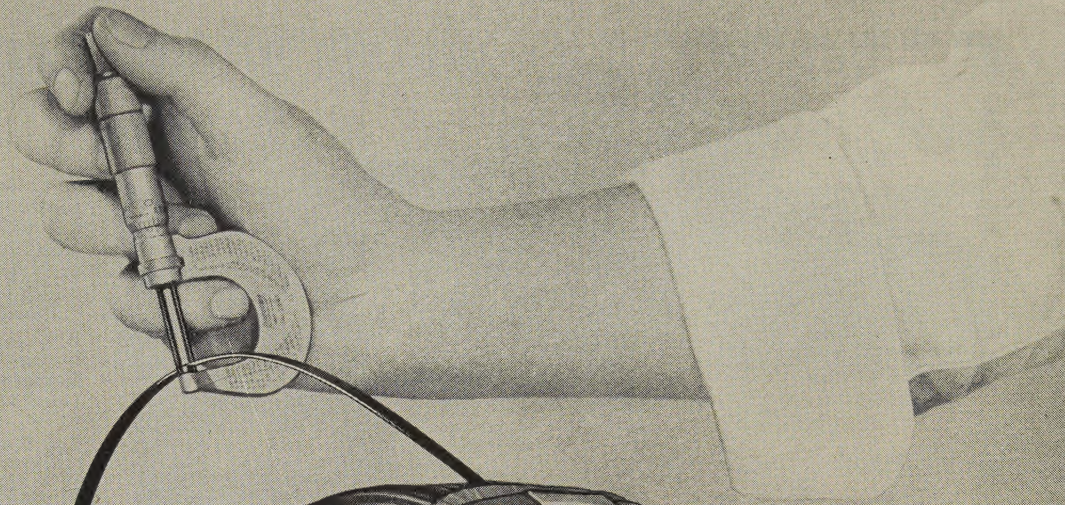
Why is the price for a ferrochrome with 0.025 per cent maximum carbon lower than the price for a grade with higher carbon content, such as 0.1 per cent maximum?

How much carbon is in ferromolybdenum?

Y. Matsunaga
Technical Superintendent
Nippon Yakin Kogyo Co. Ltd.
Tokyo, Japan

• Chromium content largely determines the price of ferrochrome. The grades with the higher carbon content cost more because they also have a higher

(Please turn to page 12)



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LETTERS

(Concluded from page 10)

chromium content. The low-carbon ferronickel-chrome with 0.025 per cent carbon has a chromium content of 63 to 66 per cent. Grades with carbon maximums of 0.03 through 2.00 per cent have chromium contents of 67 to 71 per cent.

Ferromolybdenum contains from 0.60, 0.60, or 2.50 per cent carbon, depending upon the grade. For additional information, write: Climax Molybdenum Co., 500 Fifth Ave., New York 3, N. Y., or Molybdenum Corp. of America, Grant Bldg., Pittsburgh, Pa.

New Parts Making Methods

If reprints of the fine article, "A Look Ahead at Part Making" (July 29, Page 112) could be furnished, eight copies for the information of development engineers in the Ordnance Weapons Command would be appreciated.

G. Reinsma
Chief, Research Office
Headquarters, Ordnance Weapons Command
Rock Island, Ill.

Compliments Job STEEL Does

We have on numerous occasions noted many interesting and informative features in STEEL and would like to take this opportunity to compliment you on a job well done.

Specifically, we have noted with unusual interest the editorial, "Parable of the Prices" (July 15, Page 51). The theme is exactly that which we have tried to eulogize ourselves but without success.

We would appreciate permission to reproduce it on the back page of a circular we are planning on the subject of product pricing.

George R. Platt
Advertising Director
AerVoid Vacuum Corp.
Chicago

• Permission granted.

We think this is one of the cleverest of Editor's Views we have ever seen. We would appreciate two dozen test sheets.

G. A. Cairns
Macco Products Co.
Chicago

Stainless Weld Interest

We have read with interest, the article, "How To Avoid Trouble with Stainless Welds" (June 24, Page 116). We would like five reprints of it as well as Part II.

D. J. Schaefer
Charapion Rivet Co.
Cleveland

Marketing Draws Interest

I have been much interested in the article, "Needed: More Marketers" (Aug. 5, Page 66). Would it be possible for you to send four reprints?

R. G. H. H.
General Manager
Washburn & Co.
Worcester, Mass.

Tool Geometry Important

The article, "Guide to Carbide Tool Geometry" (July 8, Page 110), is of considerable interest to us. We would appreciate three reprints.

Armand J. Ledet
Executive Vice President
Black Rock Mfg. Co.
Bridgeport 5, Conn.

CALENDAR OF MEETINGS

9-11, American Mining Congress: Metals mining and industrial minerals convention, Wash and Newhouse Hotels, Salt Lake City, Utah. Congress' address: 1102 Ring Bldg., Washington 6, D. C. Executive vice president and secretary: Julian D. Conover.

9-12, Society of Automotive Engineers: Motor meeting and production forum, Hotel Schroeder, Milwaukee. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

9-13, Instrument Society of America: Annual instrument-automation conference and exhibit, Public Auditorium, Cleveland. Society's address: 313 Sixth Ave., Pittsburgh 18, Pa. Executive director: William H. Mushnick.

11-14, National Metal Trades Association: Eastern plant management conference, Cambridge Hotel, Atlantic City, N. J. Association's address: 337 W. Madison St., Chicago 6, Ill. Secretary: Charles L. Blatchford.

12-14, Automotive Parts Rebuilders Association: Annual meeting and exhibit, Congress Hotel, Chicago. Association's address: 10 S. State St., Chicago 4, Ill. Executive secretary: Jack O'Sullivan.

17-18, Electronics Industries Association: National technical machine tool automation meeting, Ambassador Hotel, Los Angeles, Calif. Association's address: 1721 DeSales St., N.W., Washington 6, D. C. Secretary: James D. Secrest.

17-20, American Die Casting Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David A. Baine.

18-20, National Industrial Conference Board: Marketing meeting, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

20, Malleable Founders' Society: Fall meeting, Hotel Cleveland, Cleveland. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

21-24, Steel Founders' Society of America: Fall meeting, Homestead, Hot Springs, Pa. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Secretary: George K. Dreher.

22-24, American Machine Tool Distributors Association: Annual meeting, Hotel Cleveland, Cleveland. Association's address: 900 Arch St., Philadelphia 3, Pa. General manager: James C. Kelly.

22-25, American Institute of Wholesale Plumbing & Heating Supply Associations Inc.: Annual meeting, Waldorf-Astoria Hotel, New York. Institute's address: 402 Albee Bldg., Washington 5, D. C. Executive secretary: George T. Underwood.

23-25, American Society of Mechanical Engineers: Fall meeting, Hotel Statler, Hartford, Conn. Society's address: 29 W. 9th St., New York 18, N. Y. Secretary: E. Davies.

23-26, Association of Iron & Steel Engineers: Annual convention, Penn Sheraton Hotel, Pittsburgh. Association's address: 1010 Empire Bldg., Pittsburgh 22, Pa. Managing director: T. J. Ess.

26-27, American Hot Dip Galvanizers Association Inc.: Semiannual meeting, Wetherland-Hilton Hotel, Cincinnati. Association's address: 1806 First National Bank Bldg., Pittsburgh 22, Pa. Secretary: Stuart J. Swenson.

29-Oct. 3, National Screw Machine Products Association: Fall membership meeting, Roadmoor Hotel, Colorado Springs, Colo. Association's address: 2860 E. 130th St., Cleveland 20, Ohio. Executive vice president: Martin B. Wernitz.

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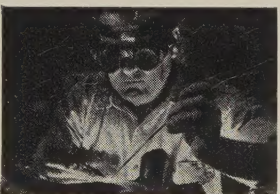
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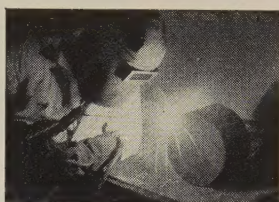
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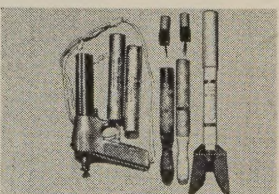
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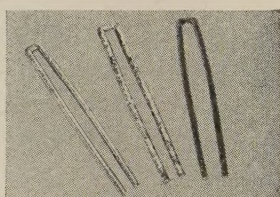
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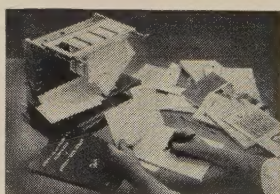
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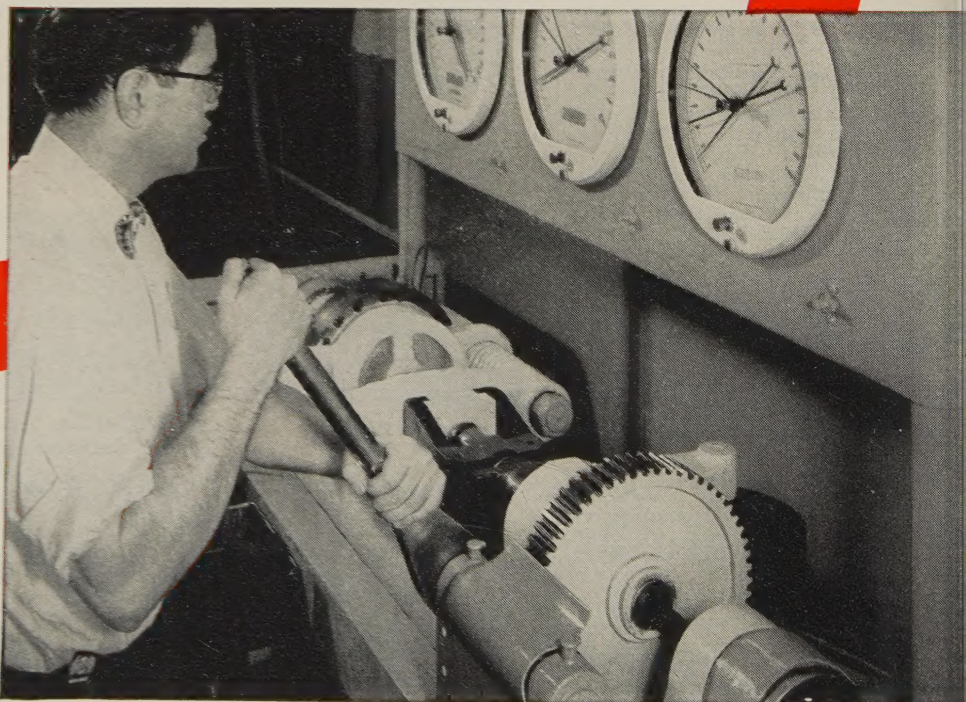
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Metalworking Outlook

Misstep for Mr. Reuther?

Walter Reuther's advice to the Big Three auto companies on \$100 price reductions for 1958 cars may backfire when he starts formal wage negotiations next spring. The United Auto Worker president is one of the first major labor leaders publicly to admit, even tacitly, that high wages contribute to high prices. The auto companies' replies in turning down the union scheme all indicate they won't forget that admission when brass-tack bargaining time rolls around. Henry Ford II points out: "Your (Mr. Reuther's) letter expresses recognition of the basic relationship between rising labor costs and inflation." He adds: "An increase equivalent to 1 cent an hour in wages would result in an increase in the labor cost content of more than \$5 per car."

Craft Union To Hit UAW in 1958

Society of Skilled Trades, a group of craftsmen that broke with the UAW in 1955, will make a last-ditch attempt to become an important union in 1958. A National Labor Relations Board ruling forbade it to try to win allegiance of most UAW members until next year when the UAW auto contracts expire. SST can try to win representation elections at new auto plants, but it has had indifferent luck at that. Odds are against its persuading many of the 400,000 skilled workers in the UAW's 1.5-million membership to desert Mr. Reuther next year. Present SST membership is about 5000, mostly tool and die men.

Borrowing Costs More

If you must borrow money this fall, remember that interest rates are the highest in nearly 25 years. The prime rate for bank loans is at 4.5 per cent; municipal bonds yield around 3.6 per cent, highest since 1935; high quality corporate bonds yield about 5 per cent; commercial paper sold through dealers is yielding slightly over 4 per cent. Corporate security offerings reached a record \$6.9 billion in the first half.

Revolution in Canmaking

"Tomorrow's can plants will be as different as today's factories are from the old tinsmith shops where cans were made in the early 1800s," says William C. Stolk, American Can Co. president. He believes the milestone was passed in doing away with handling tin plate in sheets and turning to coils. The coil process went into operation in Tampa, Fla., in May and will eventually be used in all the company's tin plate facilities.

Europe: Lucrative Mass Market

The European common market and free trade area may soon be one of the world's most lucrative mass markets, believes Willard F. Rockwell Jr.,

Metalworking

Outlook

president of Rockwell Mfg. Co. In support of the belief, his company is negotiating to purchase facilities abroad to serve that area.

Russia Goes to Water

Russia is rapidly modernizing its water transportation system. Reports National Rivers & Harbors Congress, Washington: 1. By 1960, the Soviets will build an atomic ice breaker to clear its ice-jammed ports and Arctic sea routes; within the last decade, the navigation season in the Arctic has been extended by 20 to 30 per cent. 2. By 1960, 19 big new ports will be started. 3. Twenty-five or thirty new rail-water terminals are planned for construction before 1970.

Exploration in the Arctic

A three-year expedition to explore the Arctic for minerals and oil is being financed by Cyrus Eaton, List Industries Corp., and Scurry-Rainbow Oil Ltd., Canadian oil enterprise backed by Cleveland-New York interests. Center of the exploration will be Baffin Island, which is about the size of Mexico. It's some 300 miles north across the Hudson Straits from the Eaton-controlled Ungava iron ore deposits.

Coming: Uranium Merger

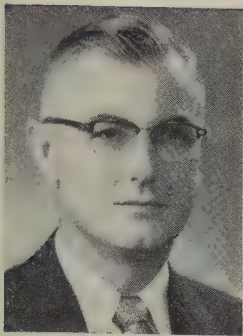
Five uranium firms may merge into the largest independent uranium mining company in the U. S. Floyd B. Odum, president, Atlas Corp., is behind a deal to merge Hidden Splendor Mining Co., Lisbon Uranium Corp., Rio de Oro Uranium Mines Inc., Mountain Mesa Uranium Co., and Radorock Resources Inc. The Atlas investment firm already has interests in the first three. The combined organization would have proved reserves with a value in the ground of more than \$100 million. Hidden Splendor would be the surviving company.

Memo from Washington

The value of new construction put in place in July rose less than seasonally to \$4.4 billion, about the same as the record July figure of 1956 . . . Net spendable earnings of factory workers rose slightly between June and July, but the rise was more than offset by the increase in the consumer price index . . . Office of Defense Mobilization will close the expansion goal for liquid oxygen and liquid nitrogen . . . Securities & Exchange Commission opposes as "unfair" a proposed reorganization plan for Northeastern Steel Corp., offered by Carpenter Steel Co., which hopes to acquire Northeastern's facilities.

Straws in the Wind

Shipments of automatic gas water heaters totaled 206,400 units in July, 11 per cent fewer than in July, 1956 . . . Studebaker-Packard Corp. will add a smaller economy auto to its Scotsman line . . . State taxes are up 8 per cent in 1957, to \$14.4 billion.



September 2, 1957

Care for Your Customer's Profit

"You know, I've always believed in the double profit system. That's where the customer, as well as the supplier, gets a profit."

The philosophy is that of Boss Kettering, long-time research chief for General Motors. It was expressed in conversation at the cornerstone laying for the Cleveland Engineering Center.

We felt that Boss Ket was expressing a basic truth—one that too often is forgotten and one about which all of us should occasionally be reminded.

Who is the customer?

To the manufacturer, it is the buyer of his goods.

To the government, it is the citizen and taxpayer.

To the corporate director, it is the stockholder.

To the employee, it is the employer.

To the editor, it is the reader.

Wise manufacturers recognize this truth. They generally succeed in giving their customers better and better products in return for a lower expenditure—measured in terms of hours of work necessary to acquire them. Manufacturers who fail to recognize the necessity of a profit for the customer fall by the wayside.

Corporations which have grown and prospered have directors who recognize that the owners must have a fair return.

The leading publications are those whose editors have given their readers the best ideas, the most possible information in the least possible reading time.

And from our observation, the employee who has prospered, has risen in stature and prestige, has been the man whose first concern was to perform the best possible service for his employer. We will bet any day on the earnest, hard working chap against the operators, the opportunists, and fast buck boys.

Boss Ket voices a homely truth that offers a profit to all who heed it—be they manufacturers, corporate directors, government officials, editors, butchers, bakers, or candlestick makers.

It could even profit the leaders of labor unions.

Walter J Campbell

EDITOR



QUALITY CONTROL REPORT

These sparks reveal vital facts about quality control of steel

You are naturally interested in the quality of your finished products—and if you use steel in making them, you should know about the Ryerson quality controls symbolized by this spark test.

Here a skilled Ryerson inspector is checking the carbon content of a steel bar by “reading” the sparks thrown off by an abrasive wheel. It’s an amazingly accurate method of making sure that you get exactly the steel you order.

And this is only one of many rigid quality controls that protect you in every purchase of steel from Ryerson stocks. For example, a heat symbol identifies every bar of alloy steel to avoid the prob-

lem of variation from heat to heat. Another example: cylinder tubing can be furnished to more accurate inside diameter through Ryerson specs controlling O. D. and I. D. instead of O. D. and wall.

The result: steel of certified quality—assured by exacting Ryerson controls, whether your product calls for carbon, alloy or stainless steels. And these quality controls become *your* quality controls in your finished product.

These are important points to remember when you specify or purchase steel. You get extra value every time you order from your nearby Ryerson plant.

RYERSON STEEL

In stock: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing, industrial plastics, machinery & tools, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI
CLEVELAND • DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Outlook for Integral Electric Motors*

	Units	Dollars
Total 1957**	1,100,000	\$292.0 Million
First five months 1957	444,481	121.4 Million
Total 1956	1,307,742	332.3 Million
Total 1955	1,276,439	280.1 Million

*Integral motors covered by NEMA—single and polyphase alternating and direct current motors and generators 1 through 200 hp.

** Estimated by STEEL.

Reliance Electric & Engineering Co.

Transition in Integrals

Motor industry's shifts in marketing and cost relations mirror problems plaguing all metalworking. Producers stock more finished goods and mechanize to keep pace with costs

INCREASING labor and material costs, reduced customer inventories, and automation are posing problems to the integral electric motor producing industry. It's facing an 8 to 15 per cent decline from last year's business (see table).

"There is a definite trend toward automated facilities in our industry to reduce the labor content of our product," says Robert C. Adams, manager, marketing administration and research for the Small AC Motor & Generator Dept., General Electric Co., Schenectady, N. Y.

Automation Problem — "These facilities can produce repetitive,

standard, and derivative motors on a low cost, high volume basis," he adds. However, special type motors, with modifications from standard frames, horsepower, or revolutions per minute, do not lend themselves as readily to automation.

"No longer are the historical cost relationships between standard and special motors the same."

In the larger plants, parts for standard motors, such as frames, housings, rotors, and shafts, are mass produced and move on conveyers between assembly operations.

Inventory Problem—But gains

in productivity are being offset by higher inventory costs.

"A lot of customers are making severe expense reductions in their own operations," says Mr. Adams. "The whole economy seems to be consolidating the great gains of previous years; people are making do with what they have. Reduced customer inventories mean we must stock more motors and cut our manufacturing cycles to give shorter shipments."

Distribution Angle — Reliance Electric & Engineering Co., Cleveland, is "regionalizing and decentralizing" its distribution program to meet the needs of reduced customer inventories.

Says W. C. McConnell, manager, General Products Div.:

"We have opened a 15,000 sq-ft warehouse at Burlingame, Calif., which is a combination sales office with modification facilities for such items as motors, electronic panels, electric brakes, and special brackets.

"We have another at Elizabeth,

N. J., with 16,000 sq ft, much of it for storage of motors and parts. We plan to install more."

Business Is Spotty—While the industry-wide estimate puts 1957 below 1956 in sales and production, some companies are faring better than others.

Reporting increases: Lima Electric Motor Co., Lima, Ohio; Electric Specialty Co., Stamford, Conn.; Electra Motors Inc., Anaheim, Calif.; and Marathon Electric Mfg. Corp., Wausau, Wis.

Reporting decreases: Emerson Electric Mfg. Co., St. Louis; Fairbanks, Morse & Co., Freeport, Ill.; and Robbins & Myers Inc., Springfield, Ohio.

In making comparisons with its 1956 performance, Electro Dynamic Div. of General Dynamics Corp., Bayonne, N. J., reported that alternating current motors are off 30 per cent, and direct current motors are up by the same amount.

New Standards Help—The most widely used integral, alternating current motors range from 7.5 through 75 hp at 1800 rpm. The recent change in National Electrical Manufacturers Association standard from 7.5 through 30 hp has been well received. Consumers like the increased power and reduced size which facilitate shipping and installation. GE has introduced a change in 40 through 125 hp motors.

Popular direct current models range from 1 through 25 hp at 1750 and 1800 rpm.

Original equipment manufacturers purchase most of the motors for use in pumps, air conditioning units, machine tools, material handling equipment, and appliances.

Wage Costs Spiral—Most contracts with the International United Electrical workers (AFL-CIO) provide automatic wage adjustments based on the Bureau of Labor Statistics cost of living index. In addition, yearly percentage raises are provided by five-year contracts.

The BLS index has been steadily rising; this month the next fixed percentage hike is due.

"In face of fixed increases in wages, plus the rising cost of living, it appears that some increase in prices will be necessary to offset the higher costs," concludes Mr. Adams.

Boats Ride Outboard Boom

ONE OF the substantial components of the leisure market for metals (STEEL, July 29, p. 71) is the outboard motor industry. Since 1951, it has increased steadily and substantially, carrying boat and trailer sales along with it (see table).

In 1956, says the Outboard Boating Club of America, Chicago, 4.7 million outboards were in use. They range from small put-putters to streamlined luxury models in excess of 30 hp.

Fishermen traditionally provide the biggest market, having bought 60 per cent of motors and 50 per cent of boats for the last three years. But last year, reports the club, 20 per cent of the motors

and 29 per cent of the boats were bought for cruising purposes.

Related Sales—Howard F. Larson, director of sales, Evinrude Motors Div., Outboard Marine Corp., Waukegan, Ill., says the firm's records show that for every motor sold, \$625 in additional equipment is sold. The outboard club reports that motor price average \$336.

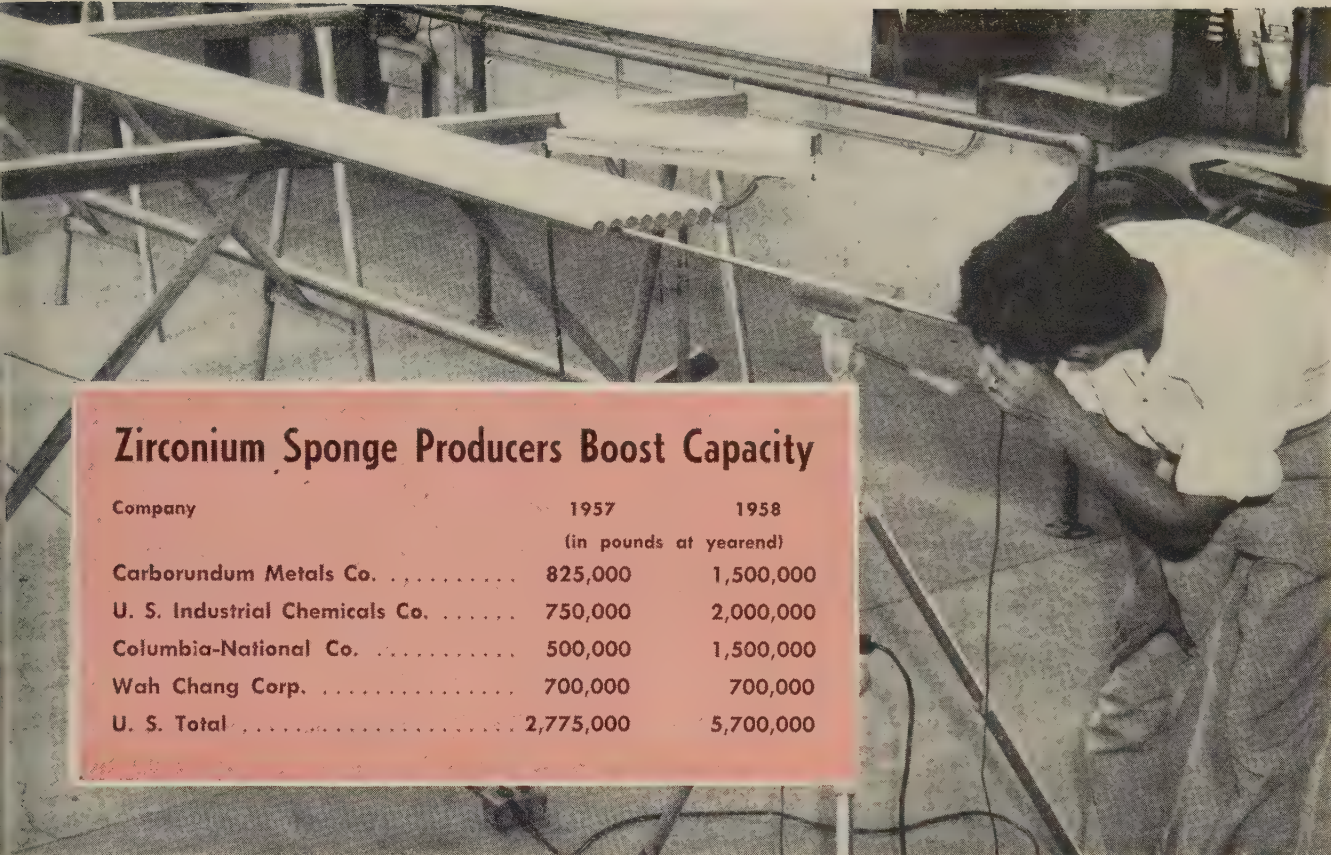
Aluminum Co. of America, Pittsburgh, says the pleasure boat market will consume 16 million lb of aluminum in 1957 (STEEL, June 1, p. 58). The outboard club estimates that 45 per cent of all outboard boats are made of aluminum, 10 per cent of plastics, and the remainder of wood.



'Leisure' Helps Metal Fabricators*

	Outboard Motor Sales Units	Boat Sales Units	Boat Trailer Sales Units
Millions of Dollars			
1957**	248	719,000	341,000
1956	217	647,000	302,000
1955	153	515,000	258,000
1954	116	479,000	223,000
1953	104	463,000	231,000
1952	70	337,000	164,000
1951	63	284,000	154,000
1950	63	367,000	131,000
1949	55	329,000	171,000
1948	73	499,000	198,000
1947	78	584,000	143,000

*Outboard Boating Club of America.
**Estimated by STEEL.



Zirconium Sponge Producers Boost Capacity

Company	1957	1958
	(in pounds at yearend)	
Carborundum Metals Co.	825,000	1,500,000
U. S. Industrial Chemicals Co.	750,000	2,000,000
Columbia-National Co.	500,000	1,500,000
Wah Chang Corp.	700,000	700,000
U. S. Total	2,775,000	5,700,000

With a Boroscope, this worker at Damascus Tube Co., Greenville, Pa., visually examines welded zirconium tubing to check size, ovality, and straightness

Zirconium To Grow in '58

Atomic Energy Commission places huge orders. Commercial applications are increasing. Prices vary widely but are dropping, reflecting decreased costs and added facilities

ZIRCONIUM sponge output in 1958 will nearly triple that of 1957. This year's production: 1.7 million lb. Principal producers are Carborundum Metals Co., Akron, N. Y., and Wah Chang Corp., Albany, Ore. operating a Bureau of Mines installation).

U. S. capacity in 1958 will be 5.7 million lb. About 400,000 lb will be imported from Japan. The Atomic Energy Commission has contracted for nearly 3.6 million lb annually for the next five years.

Facilities Added—Capacity has grown 1.75 million lb this year, but only about 400,000 lb will be produced from it in 1957's second half. Eventually, fabrication of mill products may surpass nuclear de-

mand, but fabricating processes and distribution techniques have not been fully developed. Some producers feel zirconium has a better long-range potential than titanium.

Columbia-National Corp. (Pittsburgh Plate Glass Co. recently acquired half interest in NRC Metals, now known as Columbia-National Corp.), Milton, Fla., will make 100,000 lb, nuclear grade, in 1957 and 800,000 lb in 1958. Carborundum Metals Co.'s plants at Parkersburg, W. Va., and Akron, N. Y., will produce 1.5 million lb in 1958, compared with 800,000 lb this year. It expects to reach capacity at Parkersburg this month.

Reactive Metals Inc., jointly

owned by Mallory-Sharon Titanium Corp. and U. S. Industrial Chemicals Co., begins production in its new Ashtabula, Ohio, plant this month.

Fabrication Grows—The Pfautler Co., Rochester, N. Y., is planning reactor vessels with capacities up to 1000 gallons. Says R. E. Avery, chief metallurgist:

"The main use for commercial hafnium-grade zirconium will be for corrosion resistant applications in the chemical industry. It has valuable versatility since it can be used for all alkalis and acids except hydrofluoric, sulfuric, and phosphoric at certain grades and temperatures. Volume of usage hinges on processes yet unused, such as high temperature hydrochloric reactions for organic chlorination."

Fabrication experience with titanium has brought about an earlier-than-expected development of zirconium fabrication. Niles C. Bartholomew, vice president and general manager, Carborundum Metals Co.,

estimates commercial grade production in 1957 at under 50,000 lb and 1958 at 100,000. Commercial production is not expected to surpass nuclear production for at least five years.

Prices Will Drop — Improved techniques tend to reduce the price of sponge, but Mr. Bartholomew says: "Volume has had a far greater influence; commercial grade sponge has been selling at \$7.50 a pound; reactor grade at \$7.72 and \$11.42 to AEC and \$9.50 a pound in 10,000 lb lots." The metal is sold in terms of pounds instead of tons.

Prices for commercial grades are reflecting lower costs growing from increased capacity. Present price: About \$6.50 a pound.

U. S. Industrial Chemicals Co., Ashtabula, Ohio, using a sodium process, expects to make 2 million lb of nuclear grade next year; it will ship 1 million lb at \$4.54 a pound annually to the AEC under a five-year contract. By mid-1958, USI is aiming at a nuclear range of \$4.75 to \$6.50, depending upon quality, for sponge metal to be sold in the form of platelets in excess of AEC volume. Hafnium-contained will be about \$1.50 a pound lower or between \$3.50 and \$5. USI current average for nuclear grade is \$7.

Properties—Gordon Kiddoo, vice president and general manager, Columbia-National Co., sees a growing demand for fabricated products because of high corrosion resistance. William C. Greenleaf, manager, metal development, notes that, for drawing and stamping, zirconium does not have the elongation advantages of stainless steel, and in forming, there may be some springback which is minimized by preheating. In machining, a heavier cut can be made at lower speeds.

Marketing — Carborundum is quoting and delivering sponge, ingots, and mill products direct to consumers. Columbia-National expects most mill products to be distributed by specialty warehouses and steel companies. There is a trend toward co-operative marketing setups between sponge producers and specialty steel companies. Pfaudler expects some steel-makers to produce mill products with their present facilities.

Caterpillar Builds

An industrial engine plant will be the first of a three-unit expansion near Peoria, Ill.

CATERPILLAR Tractor Co. is building a 500,000 sq-ft industrial engine plant on an 1100-acre site 12 miles north of Peoria, Ill.

Two more facilities—a multi-building research center and a general offices building—are scheduled for construction on the same site. When the engine plant is completed in early 1959, it will be used to manufacture the firm's two largest models (650 and 430 hp).

The plant will also be used to design and make all special industrial engine attachments and to assemble other industrial engines. The firm will continue to produce engines at its Peoria plant.

Cost of the three facilities will be about \$200 million for the next three years. Expected total employment is 3500 people (1200 in the industrial engine plant.)

Builds Gage Plant

American Machine & Metals Inc. will spend \$2.5 million to build a

plant at its U. S. Gauge Div., Sellersville, Pa. Robert E. Lamb Inc., Philadelphia, is the contractor.

The 180,000 sq-ft structure will almost double the firm's production capacity. R. F. Stackel is factory manager.

Plan Zinc Smelter in Canada

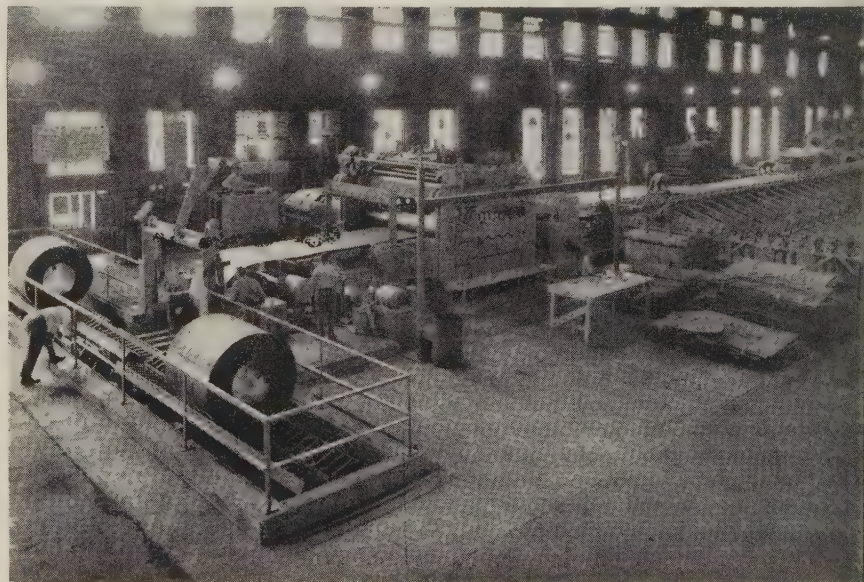
Mineral Exploration Corp., Toronto, Ont., will soon meet with interested U. S. and Canadian companies to decide whether to build a zinc smelter at Port Maitland, Ont.

The proposed smelter (daily production, 150 tons) would cost about \$21 million. The custom smelter would also sell sulfuric acid.

Office Furniture Maker Expands

Columbia Steel Equipment Co. Inc., subsidiary of Standard Pressed Steel Co., Jenkintown, Pa., will add 53,000 sq ft to its Ft. Washington, Pa., plant to give 150,000 sq ft of manufacturing and office space.

Construction will begin this month and be completed in early 1958. It is the first step in planned expansion program.



New Line for Decoiling, Leveling, and Cutting

Plate stock, ¼ in. thick by 54 in. wide, is being leveled and cut into 40 lengths by this unit which can handle material up to ½ in. thick in widths to 100 in. and in lengths up to 70 ft. The line is used by Todd-Detroit Steel Process Co., Detroit. The leveler is capable of flattening plates 1½ in. thick.

Copperweld Eyes Superior

Proposed merger would put Copperweld in the stainless business and give it strip capacity. The move follows industry trends toward diversification

FOLLOWING the current trend, another merger in the steel industry is proposed.

Directors of Copperweld Steel Co., Pittsburgh, and Superior Steel Corp., Carnegie, Pa., have approved a plan that would make Superior a division of Copperweld.

Stockholders of both firms will be asked to pass on the proposal in which Copperweld would exchange three-fourths of a share of common stock for each share of Superior common.

Diversification—The merger will further diversify the production of Copperweld, whose principal tonnage product is hot-rolled bars. Its present divisions include Steel Div., Warren, Ohio; Ohio Seamless Tube Div., Shelby, Ohio; and Wire & Cable Div., Glassport, Pa.

Addition of a Superior Div. would give Copperweld capacity to produce hot-rolled and cold-rolled strip. Superior specializes in stainless steel, alloy steel, spring steel, and clad metal.

An announcement by Chairman Frank R. S. Kaplan and President James M. Darbaker of Copperweld and President Carl I. Collins, of Superior, said no personnel changes were planned.

Mr. Collins will become vice president in charge of the Superior Steel Div., and other Superior officers will be retained in appropriate management positions.

Pattern — Some other recent moves toward diversification: Jones & Laughlin Steel Corp.'s purchase of Rotary Electric Steel Co.; Carpenter Steel Co.'s offer to buy the bankrupt Northeastern Steel Corp. (which is being considered by a federal court); and the much publicized Bethlehem Steel Corp.-Youngstown Sheet & Tube Co. proposal which is opposed by the Department of Justice.

Last year, 41-year-old Copperweld had its largest net sales, \$100.5 million. Net earnings were

\$3.4 million, 45 per cent higher than they were in 1955. In 1956, Superior's net sales were \$29 million, 24 per cent below 1955's; net earnings were \$689,767, compared with \$1.7 million the previous year.

Copperweld's annual capacity is 660,000 tons of ingots and 508,000 tons of hot-rolled products. Superior's facilities have an annual capacity of 115,000 tons of hot-rolled strip and 80,000 tons of cold-rolled strip. It has no basic steel-making capacity.

Gives Customers Office Service

Rolled Steel Corp., Skokie, Ill., offers its customers an "office away from the office." Two air-conditioned "hospitality" rooms, replete with receptionist to handle telephone calls and mail, are available to the firm's out-of-town

customers when doing business in Chicago.

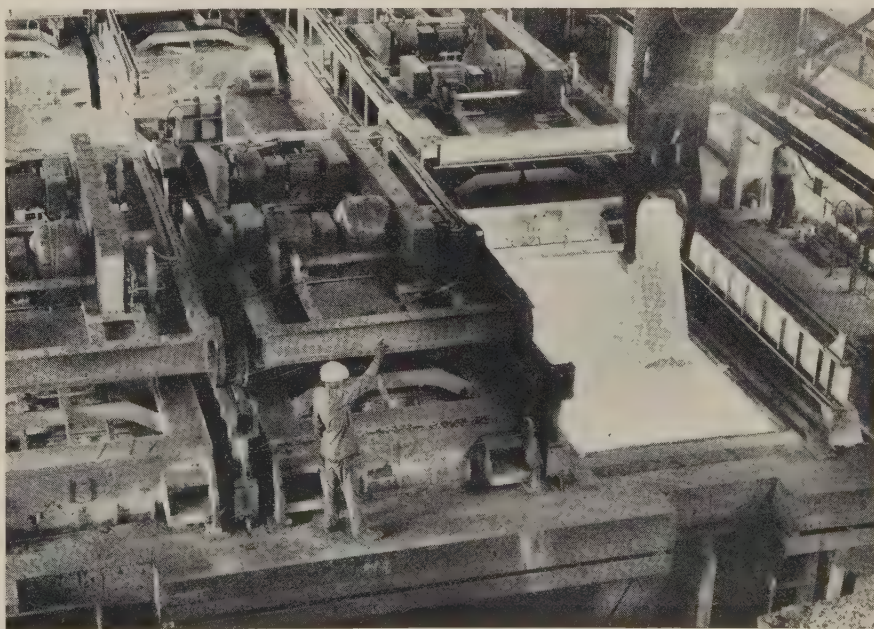
Many customers have taken advantage of the service, says Scott F. Burton, vice president, sales. The company distributes sheets, bars, plates, and structurals.

Leases Massachusetts Plant

Minneapolis - Honeywell Regulator Co., Minneapolis, leased a new \$300,000 plant in Fall River, Mass., for production of a new line of electronic industrial controls. Henry F. Dever is president of the firm's Industrial Division which will operate the plant.

Hubbard Plans Research Center

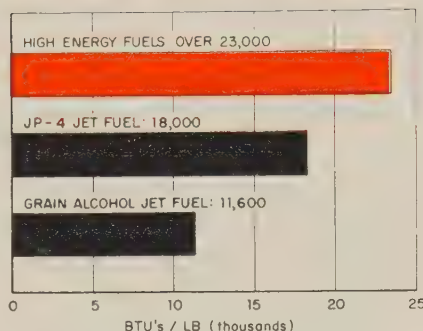
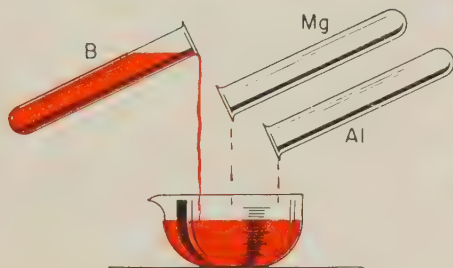
Hubbard & Co., Pittsburgh, will establish an extensive research and development center in the Chicago area, involving an expenditure of more than \$1 million. The firm recently purchased Purdue University's high voltage laboratory equipment. (It will be installed in the research center.) The building will house electrical, mechanical, chemical, and metallurgical laboratories. The company makes pole line hardware and electrical protective equipment.



Soaking Pits Handle 6 Ton Ingots

Ingots are charged vertically into these soaking pits at the Clairton, Pa., works of U. S. Steel. Each pit is 19 ft long, 7 ft 10 in. wide and 13 ft 6 in. deep. The furnaces are top-fired with coke oven gas and can heat 14 ingots simultaneously up to 2400° F

As Metals Are Used . . . Fuels Improve . . . Aircraft Fly Farther . .



Planes Use Metallic Fuels

WITHIN ten years, production of high energy aircraft fuel will be a \$1 billion industry, predicts W. C. Foster, executive vice president, Olin Mathieson Chemical Corp., New York.

His company and others are developing chemical synthetic fuels which will give missiles and piloted aircraft greater speeds, higher altitudes, longer ranges, and heavier payloads than petroleum based fuels now permit.

Since the quality most essential to aircraft fuel is high heat value per unit weight, Air Force and industry research teams continue their quest for fuels which release more heat energy than aviation gasoline's 18,000 Btu per pound. Two which meet this requirement are Olin Mathieson's HEF-2 and HEF-3 (high energy fuels 2 and 3), now being produced on a semi-commercial basis. Backed by five years of research and two years of production testing, their heat value is more than 23,000 Btu per pound.

How They're Made — "Olin's high energy liquid fuels are manufactured by combining borax, hydrogen, and hydrocarbons under special conditions," explains Dr. L. K. Herndon, head of the high

energy fuels operation at Niagara Falls, N. Y.

First shipments have been delivered to the Air Force, and within 18 months production will increase twentyfold. The AF has underwritten Olin's construction of a \$36-million plant. With wider adaptations of the fuels during the next 20 years, plant capacity may increase 100 times, Dr. Herndon believes. He pointed out that other companies selected for their experience with similar chemicals will also produce the fuels.

Problems Remain—Although the Air Force has accepted Olin's product, a rather singular problem must be solved before large quantities of HEF-3 can be consumed: An engine which can burn the fuel efficiently must be developed. Once that's done, it will be necessary to reduce the cost if it's to be used in commercial aviation. While the price of HEF-3 is still classified, \$1 a gallon would probably be conservative (that's 11 times as much as the cost of JP jet fuel).

In spite of the problems, the benefits of HEF-3 more than justify its production. They include: 1. Range increases up to 50 per cent. 2. Payload increases on flights where range is not para-

mount, since less fuel is required to fly a given distance. 3. Increased speed on flights where conventional payloads are carried. 4. Elimination of engine failure at high altitudes, since the fuel burns easily even when air is at a minimum. 5. Flight at high altitudes where wind resistance is reduced. 6. Vertical takeoffs through greatly increased engine thrust.

At present, HEF-3 is considered to be suitable for aircraft only. Although boron's heat of combustion makes it an obvious candidate for solid fuel compositions, D. S. Dinsmoor, vice president, American Potash & Chemical Corp., Los Angeles, believes "it must still be considered in the experimental stage so far as use in a missile fuel is concerned."

Will Designs Change?—The development of high energy fuels encourages speculation along these lines: If a plane can fly 50 per cent farther on a given quantity of fuel, increasing its size would not necessitate increasing its fuel capacity. Conversely, reducing fuel requirements for a flight of a given distance would permit reducing the size of an airplane. This would increase its speed or allow its use on smaller airfields.

Current emphasis on boron notwithstanding, a spokesman for Dow Chemical Co., Midland, Mich., declares that magnesium is clearly superior to boron in thrust poten-

Designs Change



cial, which is measured by the heat energy released per pound of oxygen required in burning. In his opinion, the metal is suitable for applications where short range and high acceleration are crucial. Additional support for magnesium comes from Phillips Petroleum Co., Bartlesville, Okla., a major producer of solid rocket propellants as operator of Air Force Plant 66, McGregor, Tex. Says Phillips: "In certain combinations, even the heavier metals such as magnesium and aluminum may be used advantageously as sources of heat for low molecular weight gases that will be expanded in the jet nozzle."

Other Metals—Although lithium has a fairly high heat of combustion (18,000 Btu per pound), it's too reactive to be used as a fuel in the elemental form, says Mr. Dinsmoor. American Potash is manufacturing two lithium compounds, the perchlorate and the nitrate, which might be used as oxidizing components in solid fuels. Beryllium (29,000 Btu per pound) appears to be disqualified because of its toxicity, scarcity, and price. Aluminum gives no more heat than carbon (13,000 Btu per pound) but merits study, in the opinion of Dr. Walter T. Olson, chief of the propulsion chemistry division, National Advisory Committee for Aeronautics, Cleveland.

Uranium: Steady Rise

Concentrate Production Grows . . .

2nd half 1955	1st half 1956	2nd half 1956	1st half 1957
(in tons)			
1600	2600	3400	4141

As More Mills Are Added

In operation in 1956	By end of 1957	Under contract or construction for operation after 1957	Total
12	17	7	24

● **FIVE NEW** uranium processing mills are slated to begin concentrate production before the end of 1957. Seven more, including one pilot plant, are under contract or construction by private industry.

During the first half, the nation's 12 mills (including the government facility at Monticello, Utah) produced 4141 tons of U_3O_8 .

The five new facilities include: Texas-Zinc Minerals Co., Mexican Hat, Utah; Western Nuclear Corp., Split Rock, Wyo.; Dawn Mining Co., Ford, Wash.; Union Carbide Nuclear Co., Rifle, Colo.; and Trace Elements Corp., Maybell, Colo.

Ore Reserves—Economically minable and metallurgically suited for treatment, ore reserves in the U. S. are estimated at 67 million tons. They're expected to contain an average of 0.27 per cent uranium oxide. New Mexico has the largest reserves—47.7 million tons. Five states—New Mexico, Utah, Wyoming, Colorado, and Arizona—have total reserves of about 64 million tons.

Ore Stockpiles—On July 1, stockpiles averaging 0.28 per cent of U_3O_8 totaled 1.95 million dry tons. Processing plants are treating ore at an average daily rate of 9600 tons (vs. 9000 in January).

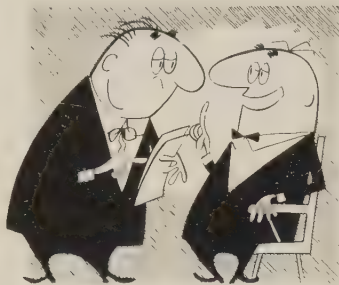
Ore receipts at all domestic plants and government purchase depots for the first six months came to 1.7 million dry tons.

Production—Mills produced an average of 690 tons of concentrate monthly for a 4141-ton first half. They processed 1,694,000 tons of ore.

Bonuses—Under the terms of Domestic Uranium Program Circular Six, \$10,581,062 was paid on 832 properties as initial production bonuses through June 30. Payments for the first half amounted to \$1.5 million.

Employment—About 2800 were employed in uranium processing plants in the West at midyear. An additional 5500 work in uranium mining.

Congress' Recess Doesn't Stop the Committee Work



ALTHOUGH Congress is on its way home, don't think you can expect much relief from political noises in Washington. Two committees will continue to produce plenty of news this fall: 1. The Joint Economic Committee's hearing on federal spending policies. 2. Sen. Estes Kefauver's (D., Tenn.) appointment with Bethlehem Steel Corp. in October.

Both hearings will be geared to provide live political issues for the 1958 congressional elections.

Look for the Joint Economic Subcommittee on Fiscal Policy (headed by an Arkansas Democrat, Rep. Wilbur Mills) to query economists closely about the "planned recession" (STEEL, July 29, p. 78) many observers think we are going through with present Defense Department cutbacks and tight money policies.

The full committee will check into "prices and pricemaking" after its staff reports on preliminary investigations. With administered prices being covered by Senator Kefauver's Antitrust & Monopoly Subcommittee, chances are there will be no formal hearings this year by the Joint Economic Committee.

Steel Investigation Runs Out

Senator Kefauver didn't bother to listen to Otis Brubaker, United Steelworkers of America research director, on the last day of his testimony in the steel hearings. In fact, no member of the subcommittee showed up, so Sen. John Carroll (D., Colo.) ran the show.

Mr. Brubaker continued his attack on U. S. Steel Corp., with reams of statistics showing how "well" corporation profits are, and how "sick" workers' paychecks are. The matter has degenerated into a re-fight of the 1956 wage negotiations. Senator Carroll suggested that the hearings be resumed in October with a round table discussion featuring Mr. Brubaker and the steel companies. Mr. Brubaker declined.

Bethlehem Steel Corp.'s executive talent will come to town in October, if the subcommittee's present schedule holds. After that, Senator Kefauver says he'll hear steel consumers, but a noticeable lack of excitement, even among staff members, prevails. No one will be surprised if no steel consumers show up.

To Make Union Reports Public

The Senate's vote to allow the secretary of labor to reveal union financial reports filed with the de-

partment could really open up a Pandora's box. It's no secret in Washington that the reports (required of all unions availing themselves of National Labor Relations Board services) are in a "shameful state," according to one observer here. The secrecy ruling has meant that many reports were never completely filled out or were incorrect.

Smathers Subcommittee Sticks to Its Guns

Filing a report on military procurement practices and small business, Sen. George Smathers' (D., Fla.) Government Procurement Subcommittee says: 1. Contracting officers continue to favor big companies over small ones. 2. The difficulty of doing business with the Defense Department tends to give large firms a break over small ones. 3. Top Defense officials don't usually practice what they preach. (They say they want to help small companies but don't convince the contracting officials they mean what they say.)

The outlook: A flood of bills to help small firms taxwise will come up early in 1958.

Navy Missile Program Stands

In line with Air Force cutbacks, the Navy will save about \$90 million in fiscal 1958 by slowing down or curtailing manned aircraft production. The Navy's missile program will not be affected.

It now has two surface-to-surface missiles, two air-to-air and three surface-to-air. Procurement of two Navy air-to-air missiles (Sparrow I and II) has been terminated, or will be, as present planned production comes to an end.

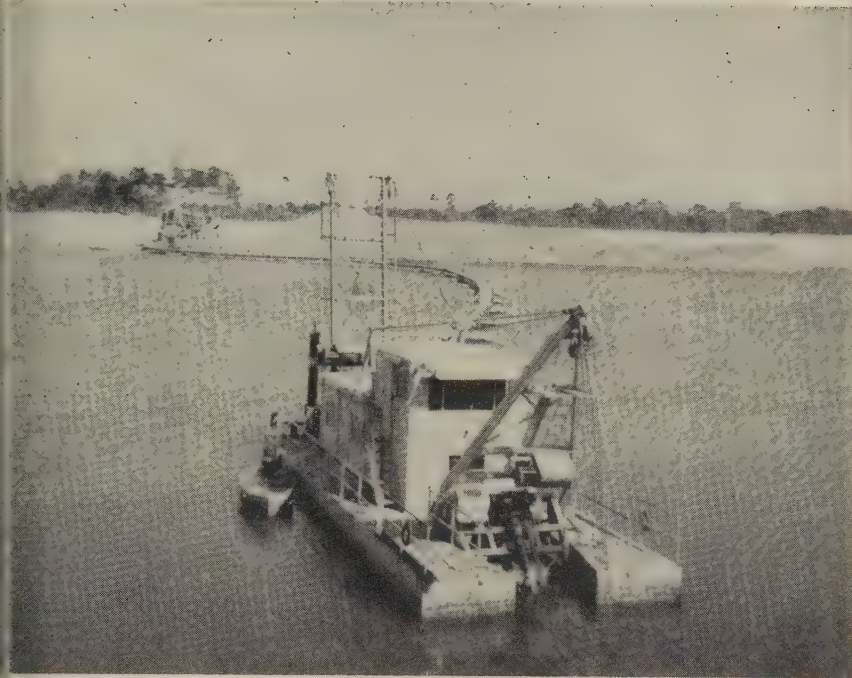
Manned aircraft hit by the economy drive: Crusader, Skyray, Skyhawk, Demon, and Lockheed's W2V-1. Martin's famed Seamaster was cut back in June.

But A-Plane Program Is Hurt

Rep. Melvin Price (D., Ill.), Capitol Hill's prime advocate of atom powered aircraft, is at war with the White House over a failure to back up the A-plane project. "There is little or no systematic understanding of the program there," he says. The AEC canceled its contract with the Pratt & Whitney Div. of United Aircraft Corp. Rep. Price adds that Lockheed Aircraft Corp.'s contract for the airframe will also be slowed down. General Electric Co.'s AEC contract for a reactor may continue without any hitch, says one Pentagon source.

Seaway Toll Fight Shapes Up

The call has gone out on Capitol Hill: No more money for the St. Lawrence Seaway unless tolls are competitive with other transportation interests. With rising labor and construction costs, you can expect the seaway to need more money next year, too.



The dredge starts a continuous cycle mining operation at Winter Beach, Fla.

Hobart Produces Rutile

Scarcity and high cost of rutile prompt welding rod maker to vertically integrate back into the mining stage. Hobart Bros. separates the mineral from Florida sands

"CONSTANT FLOW" mineral separator, developed by Hobart Bros. Co., Troy, Ohio, is used to separate titanium dioxide from sand at the firm's Winter Beach, Fla., mining site.

Rutile, one of the three forms of titanium dioxide, is washed out of wave-pulverized rock along the east of South Carolina and Georgia, carried south by the ocean current, and deposited along the protruding coastline of Florida. Hobart's two unit, continuous cycle operation converts the ore to usable titanium dioxide, illmenite, zircon, and monozite.

Dredging—After heavy swamp vegetation is cleared, a dredge capable of handling 400 tons per hour (about 1 per cent is reclaimable material) mines the sand.

Separating—Sand is emptied on a vibrating screen separator where bulky waste is discarded.

Then it flows into a series of rotating "spiders" which evenly distribute it to parallel rows of separator troughs—each with a six-barreled overflow separator. After going through four banks of separators, it reaches a concentrate of about 40 per cent. Then it's pumped to the main plant and dry staged.

Upgrading—An 80 per cent concentration is obtained by running the material in suspension over Dyster tables (an inclined table which uses boards to catch the heavy minerals while the lighter minerals flow over in suspension). After drying in long cylindrical rotating ovens, it is sent through electrostatic and electromagnetic separators for classification into rutile, illmenite, zircon, and monozite.

Uses—After packaging, the minerals are shipped primarily to

welding rod manufacturers, paint producers, and the Atomic Energy Commission. Primary uses: Rutile as a weld purifier, titanium for jet engines, illmenite as a whitening agent in paint, zircon and monozite for thermonuclear furnaces and power sources.

Hobart uses most of the rutile and about half the illmenite. It uses agents to sell the excess. Says P. C. Hobart, mining consultant: "Scarcity of the minerals, plus an opportunity to produce them at lower cost and better quality, was Hobart's reason for the vertical integration." The company started mining production in 1952, but began larger operations three months ago with installation of a new dredge (see photo).

Virginia Metalcrafters Expands

Virginia Metalcrafters Inc., Waynesboro, Va., purchased the Wortendyke plant in that city. The firm will consolidate its brass foundry, gift business and that of its subsidiary, Harvin Co., Baltimore, at the new location. Expansion plans include construction of a new iron foundry.

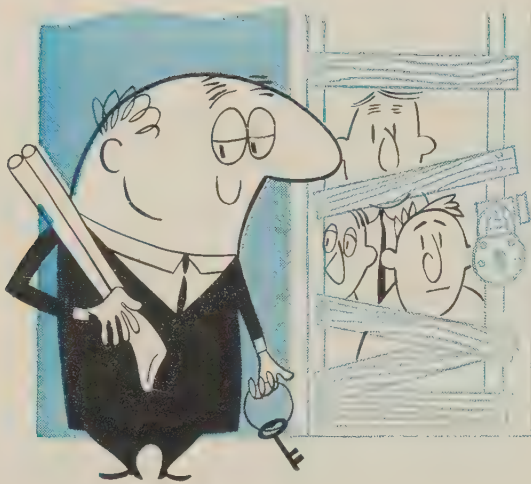
Econolite Acquires GE Line

General Electric Co., Schenectady, N. Y., sold all assets and equipment of its traffic control business to the Econolite Corp., Los Angeles. GE's Communications Products Dept., Syracuse, N. Y., will continue to manufacture radio control mechanisms for use in electronic traffic control systems.

ODM Gives Fast Tax Certificate

Allied Chemical & Dye Corp., New York, has received a certificate of necessity from the Office of Defense Mobilization for fast tax amortization of a \$11.4-million facility. It will produce uranium hexafluoride.

Under Goal 224, uranium hexafluoride is a specialized defense item produced for the Atomic Energy Commission. Eighty per cent of the facility (to be built at Metropolis, Ill.) is eligible for fast tax amortization.



Ample evidence of hoarding prompts the question . . .

Are Engineers Scarce?

Probably not, though there is disagreement. But seeming shortage prompts unethical recruiting. Here's how to keep, and make more productive, the men you have

SOME companies are hoarding engineers as they would stockpile hard-to-get raw materials. The undesirable results:

1. Too many engineers are placed on nonengineering jobs, causing inefficiency and low morale.

2. Engineers' starting wages (present average: \$433) have jumped 66.5 per cent in the last seven years, while wages of production workers have risen 38.9 per cent, and the consumer price index has increased only 16.1 per cent.

3. Engineers are in danger of losing professional status.

4. Hoarding by one industry causes a shortage in another.

5. Close supervision is becoming impossible.

6. Some companies use unethical methods to entice engineers away from one another.

7. Some college recruiters paint unrealistic pictures of salaries and status. The young engineer, upon discovering the farce, becomes dissatisfied.

A recent report by students at

the Harvard Graduate School of Business Administration ("Engineering Manpower—How To Improve Its Productivity") states: "Unnecessary people are being hired because management has no effective way of assessing the validity of engineering department manpower requirements."

Supply—There are about 700,000 engineers employed in the nation today, according to the National Science Foundation. If only 10 per cent of their time could be diverted from nonengineering to engineering functions, it would add more to our engineering forces than the entire graduating classes of the next two years.

Problem—But unethical recruiting continues. STEEL has received many reports of firms trying to hire four or five times as many engineers as were really needed. (Some hired twice as many as they needed.) The Harvard men report that they found several instances of engineers working in libraries (clipping technical reports from journals), filing, drawing charts

and posters, and even working plant cafeterias.

Cost—Recruiting is big business. The Harvard group estimates that recruiting costs vary from \$100 to \$5000 per engineer hired. Some companies maintain permanent recruiting offices in New York and Miami.

The survey adds: "Many conventions and professional meetings have degenerated into quasi-auctions where an engineer can sell himself for the most attractive offer." Many firms have "hospitality" suites in large hotels for interviewing of convention delegates.

Other companies send engineers out to recruit. But some have found it to be a dangerous practice. The Harvard study recorded seven instances in which a company fielded a recruiting team of engineers and less than half were turned. The recruiters were recruited.

Solution—Many forward-looking companies are taking steps to remedy these situations. They are:

1. Hiring engineers only in the quantity needed and only with proper background for their potential assignments.
2. Establishing programs which will enable them to hold onto their present force.

Programs offer inducements like these:

- Assignment of only engineering jobs.
- Tuition-aid programs.
- Six to eight paid holidays.
- Elimination of time clock punching.
- Insurance coverage.
- Payment of the cost of printing professional papers.
- Assignment to small work groups which have capable leaders.
- Delegation of as much responsibility as the engineer can take.
- Such assistance as technical clerical workers, computers.
- Opportunities for advancement not necessarily to management but to a staff research position.
- Salaries equal to professional standing.
- Scheduled and budgeted work.
- Educational leaves of absence.
- Regular job evaluation.
- Merit review.
- Promotion from within.

Keep Him Informed—If a man is divorced from the affairs of

company, traveling fever sets in. The engineer, because of his professional status, should be informed of all those things which affect his personal situation and which help him to feel he belongs. Too often, we impress a man with the fact that he is a member of the team and then forget to tell him on what day the game will be played," states a report of the Associated Industries of Cleveland.

Case Study—The National Society of Professional Engineers notes that a large eastern utility company turned a shortage into a surplus. A company study showed that its more than 850 engineers spent only 45 per cent of their time on engineering work.

To correct the situation, the company took these steps: 1. Each department analyzed its distribution of engineers and their assignments to determine whether changes would provide more effective use. 2. All recommended a greater use of technicians. 3. Engineers were relieved of administrative functions which could readily be performed by nonengineers. Only engineers whose background qualified them for the field in which they were needed were hired.

The company was able to decrease its engineering staff by 150,

gained better productivity, and gave engineers greater opportunity for advancement.

Work Planning — The Harvard students list steps management should take in planning engineering work:

1. Make sure that engineers understand the company's product objectives.

2. Encourage suggestions, comments, and criticism. This will help management learn: Work progress, new ideas, how much support and assistance are needed.

3. Use project charts and schedules (see STEEL, July 15, p. 64).

4. Promptly appraise, evaluate, and carefully co-ordinate the material submitted by the engineering department for review and action. You will avoid blind alleys, gain opportunities for economical improvements, and save costly engineering time.

5. Periodically and systematically review all projects.

Summing Up — Conclusion by many students of the problem: The shortage of engineers is partly artificial. It will be remedied a great deal if sanity returns to their recruitment and utilization.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, O.

Servel Sells Out

Company expects to sell all physical assets; plans to buy new "stable" business

SERVEL, the Evansville, Ind., firm that started business in 1902 as Hercules Buggy Co., is placing all its physical assets "on the block."

Pending stockholder approval on Sept. 11, it will sell its air conditioning division and defense division building to the Arkansas Louisiana Gas Co. for about \$4 million. It is also negotiating to sell its home appliance division.

Taxes—The home appliance division has an income tax carry-over of \$17 million, as of Apr. 30.

Servel intends to use the proceeds from the sale "to acquire a new and different type business, of a stable character, that will afford the company and its stockholders a reasonable return on their investment."

(Executives of the country's gas utility industry recently met at American Gas Association headquarters—presumably they're worried because Servel is the only major U. S. manufacturer of gas refrigerators. They would not like to see the gas refrigerator cease to exist simply because an unrelated firm wants Servel's assets to establish a tax loss.)

Made Carriages—The firm made buggies from 1902 until 1925. It also made gasoline engines and, during World War I, Army truck bodies. While building wooden cabinets and refrigeration units for a Detroit sales agency, it acquired the name Servel by shortening the company's "Serve Electrically" slogan.

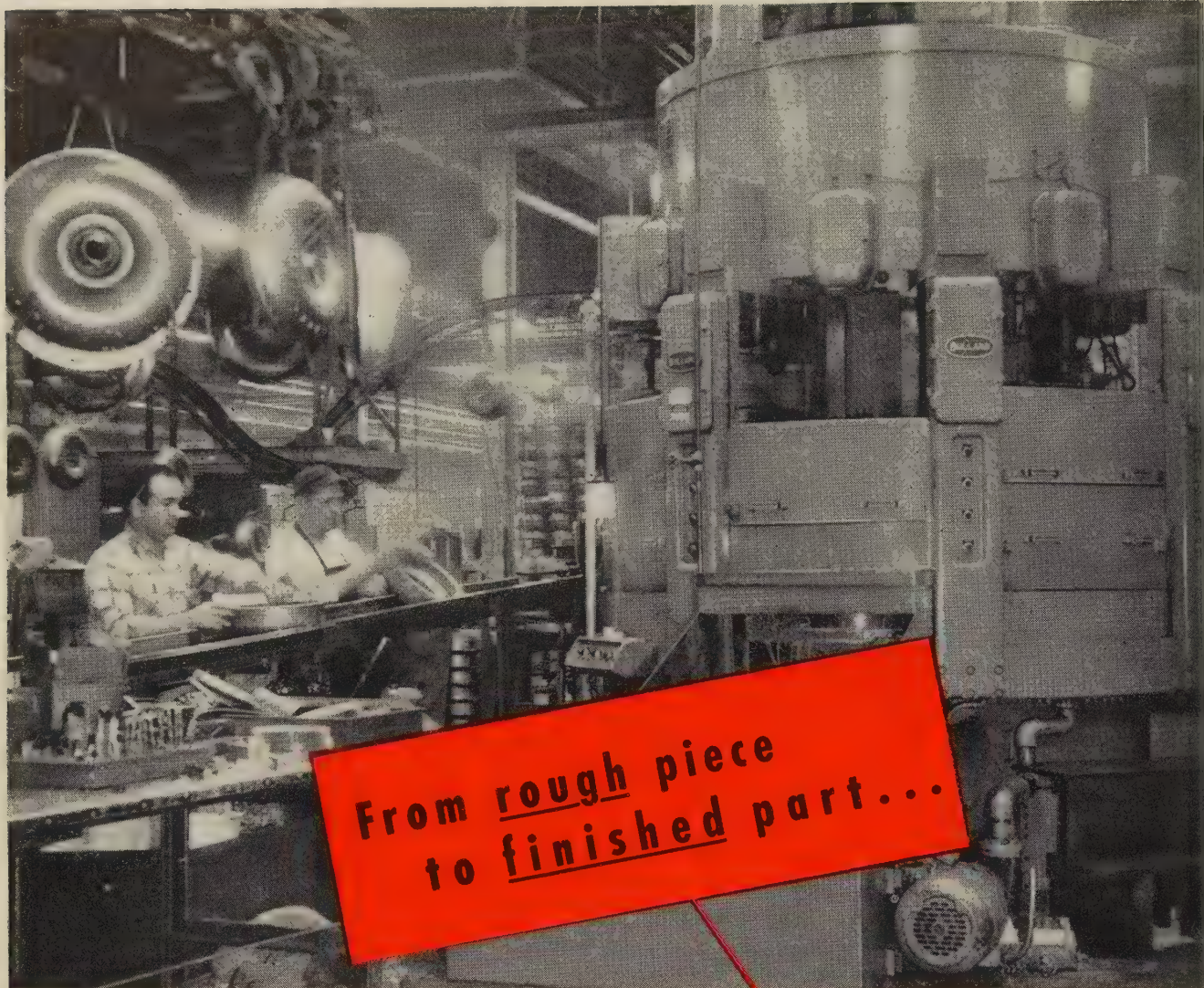
And Wings—In 1927, gas refrigeration was introduced; it kept the company operating at a profit throughout the depression. During World War II, Servel made wings for Republic Aircraft Corp. planes.

Electric refrigerator sales were hurt by the bad publicity from deaths caused by poor owner maintenance of its gas refrigerators.

Sales of central air conditioning systems were stifled by the electric room unit boom. The commercial refrigeration business was sold to Goodwill Industries more than a year ago.

Use Fair Recruiting Practices

1. Hire only as many engineers as you can effectively use.
2. Offer realistic salaries.
3. Don't display the company; have the potential recruit visit your plant.
4. Promise him only such benefits as are in effect for comparable personnel already employed.
5. Offer expense accounts on a comfortable level; don't promote extravagance or "knocking down."
6. Recruit through competent and loyal personnel who know the answer.



From rough piece
to finished part...

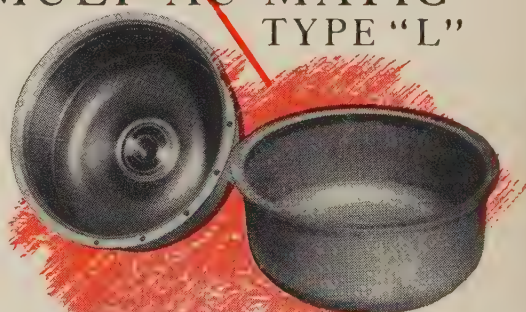
... all automatically handled by

BULLARD

Transferred to and from the machine by roller conveyors, rough piece is loaded, completely machined and finished part is unloaded without any manual effort. The machining operations performed at seven stations include boring and counterboring, rough and finished facing, rough and finished turning, drilling and chamfering — eighteen separate operations in all.

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Corporate Owned Manufacturing and Assembly Plants



*Projected

Latin American Buildup

Red tape exasperates car builders trying to cash in south of the border, but profits make the effort worthwhile. Latin American governments want manufacturing facilities

LATIN AMERICA looks like the next big overseas expansion area for automakers.

The industrial boom in countries south of the border has boosted the demand for cars and trucks.

Several sources indicate vehicle sales in Latin America will triple by 1965. Trucks will be especially profitable because they make up almost 60 per cent of Latin American imports.

Outlook — J. Wilner Sundelson,

manager of operations planning for Ford Motor Co.'s International Div., says: "The Latin American countries feel that by encouraging the development of a local automotive industry they will be able to hasten the process of general industrialization."

As imports of built-up (BU) vehicles decrease, expansion will follow this general pattern:

- Assembly of imported knock down (KD) cars and trucks.

- Manufacture of simple components for the replacement market.
- Complete parts manufacturing and assembly operations.

Hot Spots—Ford, General Motors, and Willys already have some manufacturing and assembly plants in Mexico, Brazil, Chile, and Argentina.

Chrysler Corp. recently bought a distributor-owned assembly plant in Caracas, Venezuela, to save it from liquidation. This country and Uruguay are strong sales centers.

Colombia also has been a profitable market place, but recent political maneuvers have put the kibosh on sales this year.

Other South and Central American countries, for the most part, are too small or economically unstable to support major automotive activities.

Controls—While the larger countries are eager for the added employment and income American car builders can provide, there's little doubt the expansion will be run pretty much as local governments decide.

Taxes, quota systems, and plain red tape are the common methods of controlling who's going to do what.

But for those who want to play ball, several of the countries offer attractive exchange rates and profit pictures.

Typical—Brazil wants to manufacture trucks and Jeeps locally.

A government commission which approves truck and car production projects offers special tax exemptions, land grants, and carefully controlled markets for companies that are willing to invest dollars in manufacturing and assembly facilities.

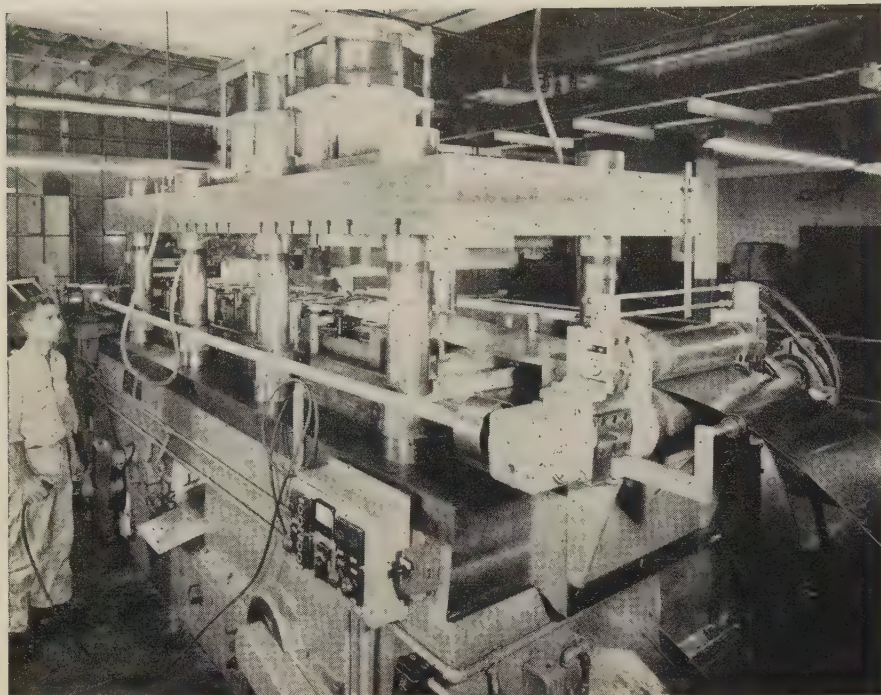
And just to make sure foreign investors get the idea, import duties on trucks are higher than those on passenger cars.

Take Hint—This year Ford and GM have started new truck manufacturing programs in Brazil.

GM plans to sink more than \$10 million into an engine foundry and assembly facilities which are the first step in a continuing project.

Ford will invest \$16 million in

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Press Whacks Out Headlight Shells

This 450-ton stamping press converts strip steel into 2000 headlight shells an hour. The machine uses progressive dies and is fully automatic. The double crank job is installed at C. M. Hall Lamp Co., Detroit

its facilities. Brazilian sources will add another \$5 million to the project.

Ford will build 8250 trucks in its new Brazilian plant this year. By 1960, the company will be producing 30,000 vehicles each year. This will equal a little less than a third of the 109,000 cars and trucks the country expects to see built locally in 1960.

Trend—Brazil leaves no doubt as to which way the wind is blowing. A recent government regulation states that by 1963, 95 per cent of all components of such industrial and consumer products as cars and trucks must be manufactured in Brazil.

Mexico—Across the Rio Grande, Mexico is keeping pace with Brazil in expansion aims.

The country forecasts an annual increase of 5 per cent for its gross national product over the next ten years.

Mr. Sundelson estimates annual retail sales of automotive activities equal \$350 million, some 8 or 9 per cent of Mexico's GNP.

A six-year road building program will require more trucks and make room for more cars. The country has a quota system which controls the number of vehicles

each manufacturer may assemble or import.

High taxes on BUs will force car builders to bring in KD units to be assembled on the spot.

But Mr. Sundelson figures Mexico will have to continue to import

U.S. Auto Output

Passenger Only

	1957	1956
January	642,089	612,078
February	571,098	555,596
March	578,826	575,260
April	549,239	547,619
May	531,365	471,675
June	500,271	430,373
July	495,629	448,876
7 Mo. Total	3,868,517	3,641,477
August	402,575	
September	190,726	
October	389,061	
November	581,803	
December	597,226	
Total	5,802,808	

Week Ended	1957	1956
July 27	119,857	111,247
Aug. 3	119,323	111,157
Aug. 10	118,864	108,167
Aug. 17	117,598	98,348
Aug. 24	122,381†	69,676
Aug. 31	122,000*	58,233

Source: Ward's Automotive Reports.
†Preliminary. *Estimated by STEEL.

at least half its trucks and cars for the next ten years until enough workers are trained to take over complicated manufacturing jobs.

Competition—Chile, Argentina and Venezuela share the ambitions of Brazil and Mexico. The spirit of competition may help cut red tape and give manufacturers more freedom in Latin America.

Venezuela has been eyed as possible site for the next facilities buildups.

First Forecasts for '58

Economists for the auto industry are predicting sales of 6.5 million cars in 1958.

This should mean production will be in the vicinity of 6.8 million cars.

George Romney, president of American Motors Corp., doesn't share this guesstimate. He says "I may want to revise my estimate later, but at the moment I'm looking for industry sales of about 6 million cars."

That's about the same forecast industry heads made for this year, but it's not panning out. At things look now, the '57 production run will total 6.2 million cars—about equal to 1956.

Sales will hit close to 5.9 million.

But automakers may come closer to the 6.5 million target next year. Economists now admit they overestimated the number of credit buyers who would return to the market place this year.

If the experts are wrong again, Detroit may have to take a long look at its expansion plans.

Steel Buying Perks Up

Unexpected ordering is boosting steel purchases for automotive use, say steel company officials in the Detroit area.

There's no rush, but one steel producer tells STEEL he's getting a 6 per cent boost in orders for mid-September delivery.

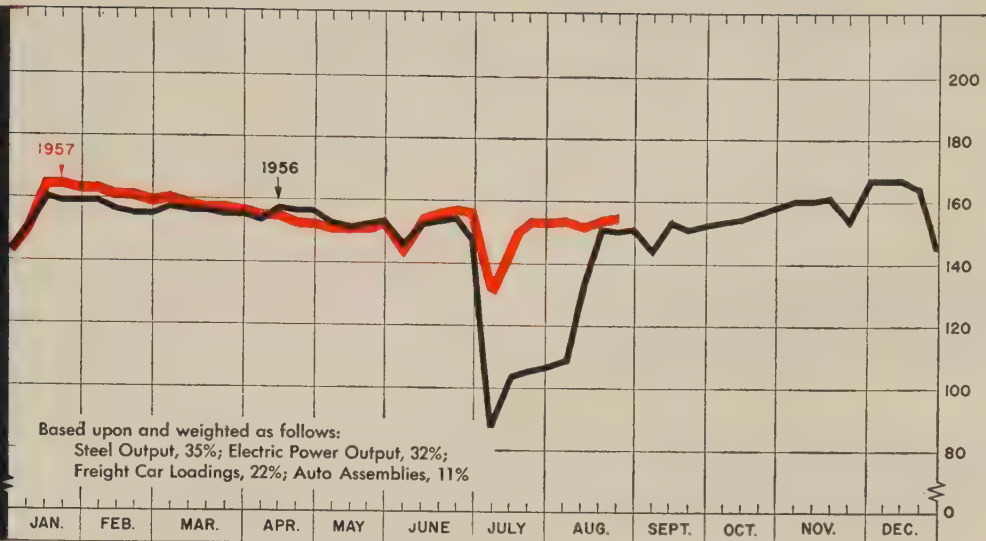
Reports another firm: "We are being surprised by the sizable tonnage for September delivery."

"Most of them are being up-dated by customers who just a few months ago said they would have nothing until October or November."

STEEL INDUSTRIAL PRODUCTION INDEX

(1947-1949=100)

LATEST WEEK **156***
PREVIOUS WEEK **155**
MONTH AGO **154**
YEAR AGO **151**



Week ended Aug. 24.

Capital Goods Show Signs of Pickup

NEW ORDERS for capital goods during the summer months indicate that the bottom of the dip from 1956's high level may have been reached. Producers of machine tools, foundry equipment, and industrial furnaces are reporting better business than they have seen in several months.

Machine Tools—Optimism is still dominant in the machine tool industry and probably will be until at least well into the fourth quarter. By then, builders will know whether the anticipated fall pick-up materialized. Major producers contacted by STEEL are confident it will come off on schedule. Some hint of better conditions is seen in the July report of the National Machine Tool Builders' Association. Net orders climbed to \$55,850,000, the highest total since March and the second monthly increase in a row. Almost as significant was the dropoff in cancellations—\$3,750,000. That's the lowest figure in 21 months.

Builders are apparently pegging production to incoming orders. Shipments dropped to \$58.5 million, resulting in a stabilization of backlogs at 4.2 months. Vacations contributed to some, but by no means all, the decrease in output. Last year, when backlogs were above eight months, STEEL asked tool builders what they considered

to be the best backlog level. The consensus was about four months. It is likely they will exercise a certain amount of control over production to maintain that position. Shipments will continue to be pegged to new orders and will remain below first-half figures until orders pick up.

The tool builders' confidence is based on a large volume of inquiries. Industry talk has it that at least three major automotive projects are under consideration and that any one—or all three—could break soon. One report has a major auto producer putting an entirely new engine in its 1959

BAROMETERS OF BUSINESS

INDUSTRY

Steel Ingot Production (1000 net tons) ² ...	2,132 ¹	2,101	2,389
Electric Power Distributed (million kw-hr)...	12,200 ¹	12,409	11,340
Bituminous Coal Output (1000 tons)	9,595 ¹	9,690	9,758
Petroleum Production (daily avg—1000 bbl)	6,800 ¹	6,837	7,122
Construction Volume (ENR—millions)	\$257.7	\$411.9	\$321.5
Auto, Truck Output, U. S., Canada (Ward's)	150,697 ¹	146,259	88,785

TRADE

Freight Car Loadings (1000 cars)	750 ¹	751	770
Business Failures (Dun & Bradstreet)	222	265	289
Currency in Circulation (millions) ³	\$31,055	\$31,069	\$30,654
Dept. Store Sales (changes from year ago) ³	+4%	+3%	+5%

FINANCE

Bank Clearings (Dun & Bradstreet, millions)	\$21,835	\$19,242	\$21,787
Federal Gross Debt (billions)	\$271.4	\$271.7	\$274.9
Bond Volume, NYSE (millions)	\$17.0	\$17.7	\$18.1
Stocks Sales, NYSE (thousands of shares)...	9,922	8,800	8,893
Loans and Investments (billions) ⁴	\$85.8	\$86.0	\$86.1
U. S. Govt. Obligations Held (billions) ⁴ ...	\$24.6	\$24.8	\$27.2

PRICES

STEEL's Finished Steel Price Index ⁵	239.15	239.15	225.71
STEEL's Nonferrous Metal Price Index ⁶	213.8	214.3	262.3
All Commodities ⁷	118.0	118.1	114.6
Commodities Other Than Farm & Foods ⁷ ...	125.7	125.6	122.3

*Dates on request. ¹Preliminary. ²Weekly capacities, net tons: 1957, 2,559,490; 1956, 2,461,893. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-1939=100. ⁶1936-1939=100. ⁷Bureau of Labor Statistics Index, 1947-1949=100.

automation

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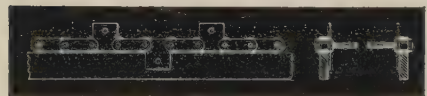
No. 1 Single conveyor using standard M35 attachment links



No. 2 Single conveyor using standard K1 attachment links



No. 3 Single conveyor using standard D1 or D3 pin attachments



No. 4 Double conveyor using standard M1 attachments and cross rods



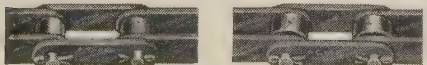
No. 5 Double conveyor using standard K1 attachments

DOUBLE PITCH ROLLER CHAINS

Double pitch conveyor chains are becoming increasingly more popular in many industries where high grade finished roller chains are required, at a lower cost than the standard pitch chains. This series was developed on the basis of using standard round parts of the standard series and doubling the pitch. For example double pitch chain #C-2080 which is 2" pitch utilizes the same round parts as 1" pitch heavy series chain #80H.

In addition to being applicable for slower speed power transmission drives these chains are widely used as conveyors for the handling of materials. A standard line of attachments are available that gives this line great versatility in reference to incorporation of cross flights, cross rods, etc., that are applicable for conveyor work.

The double pitch series of chains are widely used in the Agriculture Implement, Baking Machinery, Construction Machinery, Mining, Packaging, Textile industries, etc.



Straight Side Plates, Standard Rollers

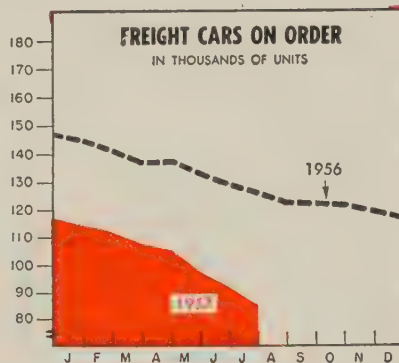


Straight Side Plates, Oversize Rollers

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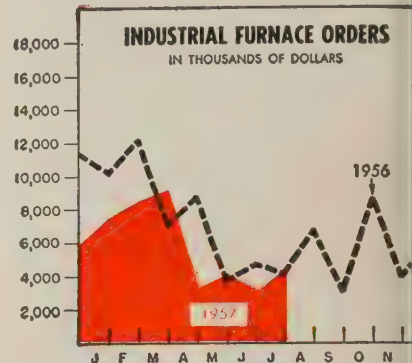
THE BUSINESS TREND



	Awards		(end of month)	
	1957	1956	1957	1956
Jan. ..	5,328	1,818	114,856	144,946
Feb. ..	6,065	1,675	111,965	141,437
Mar. ..	5,359	1,618	107,708	137,070
Apr. ..	6,423	6,559	105,190	137,436
May ..	3,423	2,403	97,006	133,072
June ..	4,918	2,859	91,810	129,409
July ..	1,251	2,642	85,229	126,194
Aug. ..	.....	2,575	.....	122,870
Sept. ..	.....	3,949	.....	122,421
Oct. ..	.....	6,532	.....	122,250
Nov. ..	.....	4,172	.....	119,626
Dec. ..	.....	4,992	.....	117,320

Total 41,794

American Railway Car Institute.
Charts copyright, 1957, STEEL.



	1957	1956	1955
Jan.	7,380	10,244	4,000
Feb.	8,373	12,163	5,000
Mar.	9,090	7,025	7,000
Apr.	3,164	8,803	7,000
May	3,994	3,667	6,000
June	2,974	4,748	5,000
July	4,332	4,140	4,000
Aug. ....	.....	6,722	6,000
Sept. ....	.....	3,057	8,000
Oct. ....	.....	8,741	9,000
Nov. ....	.....	3,986	6,000
Dec. ....	.....	5,858	11,000

*Not including new orders for steel furnaces.
Industrial Heating Equipment Assn. Inc.

models, tooling for which would have to be ordered this fall. The cuts in Air Force spending for manned aircraft are not likely to make much of a dent in the market. Some orders might be switched around as missiles take over, but the over-all industry position will stay about even.

Foundry Equipment — This industry is hard to analyze on a monthly basis because of the effects that even one large order gained or canceled can have on it. But June represented the second highest month of the year and the second in a row to show improvement, according to the Foundry Equipment Manufacturers Association. The new order index of 187.5 (1947-49 = 100) brought the monthly average for the first half up to 143, considerably beneath the year-ago average of 169.4, but a significant improvement over 1956's second half figure of 128.7. With demand for castings remaining strong from the railroad car builders (see chart above) and signs of a pickup from the auto and appliance industries, foundries are likely to continue this level of capital spending or even increase it.

Industrial Furnaces — Although

orders for this equipment during the first seven months of this year trail the comparable 1956 period by 23 per cent, three months have been better than their year-ago counterparts. (See chart and table above.) In addition, July was the best month since March and represented a substantial rebound from abnormally low June

Material Handling Equipment — On the basis of the June report it seems that demand for this capital equipment is dropping off. But the Material Handling Institute Inc. points out that the first half of this year experienced an over-all increase in orders, compared with a decreasing trend in the latter half of 1956. The index for the first quarter was 135.4 (1954 = 100), compared with 133.21 for the fourth quarter of 1956. Last quarter came up to 137.40. The outlook for this industry is good in view of the continuing trend toward automation.

Aetna-Standard Engineering Co. Youngstown, indicates that business in the steel mill equipment industry is still at top level. With a backlog worth \$22 million, the company expects to operate at full capacity during the fiscal year which began in July.

Cold Heading Cost Savings

Actual Cost Cuts
As High As 70%

The most important consideration we can point out to the designer or purchaser of fasteners and small parts is that any part which can be machined from rod stock is also potentially available from the cold heading manufacturer. This technique offers speed of production, without scrap loss, plus superior strength and appearance for low cost and high design efficiency.

The designer need not be restricted to standard fastener sizes when they do not meet the requirements of his application. It is often much less expensive to specify a rivet, nail or screw to meet the task exactly as the application requires, than it is to compromise its function for the sake of "standards." While there is nothing mysterious about the cold heading process, experience has proved it to be of inestimable value for getting maximum quality and output at a minimum cost. While the really spectacular advantages in cost show up in runs of several thousand pieces, we are also able to take care of short run requirements. We welcome and expect manufacturers to come to us for advice and assistance concerning their fastener problems.

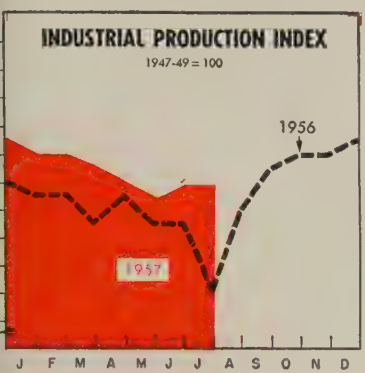
Given complete specifications, including a drawing and an idea of the application, we can quickly tell you whether or not it will be advantageous to have your fastener or part **JOB-DESIGNED** by **HASSALL**. The remaining important aspect of our service to you is the ability to get into production quickly and make prompt shipment.

Write for a copy of our new booklet, "What the Designer Should Know about Cold Heading".

John Hassall, Inc.

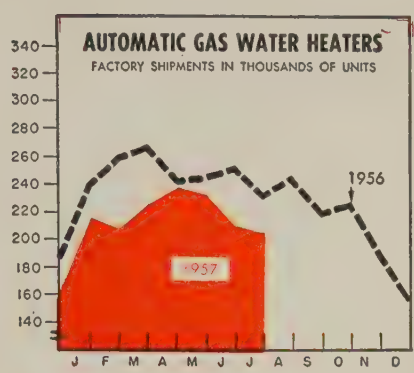
P. O. Box 2269

Westbury, Long Island, N. Y.
Manufacturers Since 1850



(Seasonally Adjusted)					
Total Production		Primary Metals		Metal Fabricating	
1937	1936	1957	1956	1957	1956
Jan. 146	143	144	148	180	170
Feb. 146	143	143	146	180	168
Mar. 145	141	137	145	179	167
Apr. 144	143	136	146	176	170
May 143	141	132	141	175	167
June 144	141	132	136	177	168
July 144*	136	134*	69	178*	169
Aug. ...	142	...	124	...	172
Sept. ...	145	...	148	...	176
Oct. ...	146	...	147	...	177
Nov. ...	146	...	147	...	180
Dec. ...	147	...	145	...	183
Avg. ...	143	...	137	...	172

Federal Reserve Board. *Preliminary.



Shipments—Units			
	1957	1956	1955
Jan.	214,900	239,000	210,900
Feb.	208,200	259,200	228,400
Mar.	226,600	267,500	263,100
Apr.	238,200	241,200	245,200
May	233,600	244,300	229,400
June	210,700	251,500	227,100
July	206,400*	231,900	219,300
Aug. ....	.....	243,500	275,600
Sept. ....	.....	218,100	237,100
Oct. ....	.....	224,700	231,200
Nov. ....	.....	184,400	195,500
Dec. ....	.....	156,800	185,400
Totals ...	.....	2,762,100	2,748,200

*Preliminary.
Gas Appliance Mfrs. Assn.

Appliances Begin Uptrend

There's more bullishness in the appliance industry today than there has been in many months past. Most major appliance manufacturers are recalling personnel laid off earlier in the year; some are hiring additional workers. Typical of the attitude is that of John M. Otter, executive vice president of marketing for Philco Corp. He expects higher sales and higher earnings for his company in the coming months. He is most optimistic about home laundry equipment.

TV and radio sales are improving. Manufacturers' shipments to dealers in June (382,699 units) improved markedly over those in May and were nearly equal to the number shipped in June, 1956. Radios continue to set a hot pace, with June shipments to dealers totaling 765,719 units, a near record quarter of a million more than in May, reports the Electronic Industries Association.

Failures Down; Charters Up

Business failures in July continued the seasonal downtrend, reaching 1059 casualties, accord-

ing to Dun & Bradstreet Inc. This was off slightly from June but still a bit above the July, 1956, figure. Business incorporations in July (11,686 firms) rose above the year-ago month for the first time since last January and exceeded the June figure. So far this year, 8148 businesses have folded, while 83,770 have opened their doors for the first time.

Trends Fore and Aft

- Sales of farm machinery by Oliver Corp., Chicago, are about 4.5 per cent ahead of last year's, declares J. R. Covington, vice president and secretary. Mr. Covington is bullish on the farm equipment outlook, reasoning that "more food must be raised for more people from the same amount of land by fewer persons using much more machinery."

- The backlog of orders for fabricated structural steel fell another 82,000 tons in July as bookings slipped to 202,772 tons and shipments remained substantially higher at 303,512 tons. Even at 3,137,526 tons, unfilled orders were 9 per cent higher than the year-ago total, says the American Institute of Steel Construction Inc.



4-star feature with Drive-in Movies...

SPEED NUTS® simplify heater maintenance

Right from the start, the Electromode Division of Commercial Controls Corporation, Rochester, designed Tinnerman SPEED NUTS into their new electric car heaters for drive-in theaters. SPEED NUTS provide efficient, economical attachments that simplify servicing and give Electromode a powerful sales advantage with theater owners.

Four "U" Type SPEED NUTS hold the weather-tight steel cover firmly in place. SPEED NUTS eliminate the need for welding, staking or tapping. Self-retained, they stay in position even when the cover is removed for inspection or servicing. They "float" in the panel to offset hole misalignment. And because of their unique design, SPEED NUTS never rust or freeze to screw threads even under prolonged outdoor exposure.

This is a prime example of the advantages gained by designing with SPEED NUT Brand Fasteners in mind. Peak fastening efficiency is built in—no need to invest in high-cost tooling at the start, or to make revisions to cut costs later. Call in your Tinnerman representative now to discuss your new

design projects. He can help you save time and money without sacrificing product quality. His office is listed in most major telephone directories. Or write to:

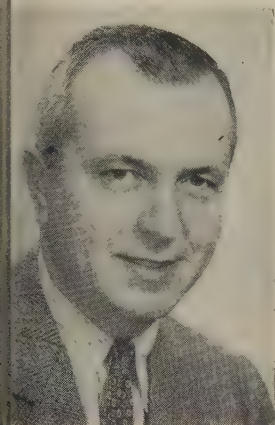
TINNERMAN PRODUCTS, INC.
P. O. Box 6688 • Dept. 12 • Cleveland 1, Ohio

TINNERMAN

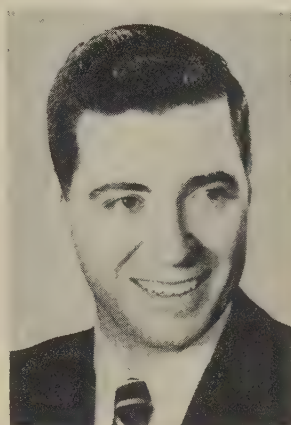
Speed Nuts®



FASTEST THING IN FASTENINGS®



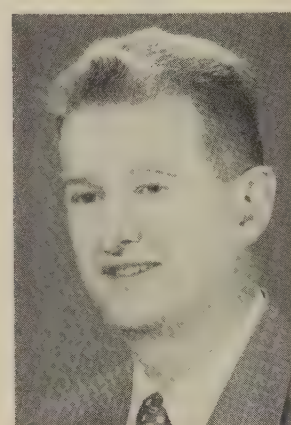
A. F. ANZLOVAR
Mercast Mfg. v. p.-gen. mgr.



ROBERT O. WILDER
National Forge president



VICTOR EMERY
Aeroquip sales position



JOHN J. KNOX
Reading Tube purchasing agent

F. Anzlovar was elected vice president and general manager, **Mercast Mfg. Corp.**, La Verne, Calif., a subsidiary of **Mercast Mfg. Corp.** of California and an affiliate of **Atlas Corp.**

Robert O. Wilder, executive vice president, **National Forge & Ordnance Co.**, Irvine, Pa., was elected president to succeed **John C. Harrington**, now chairman. **Duance Wilder**, secretary-treasurer, assumes added duties of vice president.

Anthony Inc., New Haven, Conn., appointed **Edward F. Foley Jr.** production manager and purchasing agent; **Lawrence J. Durney**, manager of product development; **William K. Murray**, manager of technical service.

R. H. Ingley, vice president-manufacturing, **Diamond Alkali Co.**, Cleveland, fills the new post of senior vice president. **James A. Hughes**, treasurer, advances to vice president-administration, also new post. **R. H. Armor** was elected treasurer. **Donald S. Carmichael**, secretary, was named to the additional post of general counsel.

P. Henry was appointed vice president-general manager of sales of **Ampco Metal Inc.**, Milwaukee, newly created post. He was the firm's general sales manager.

Lowell S. Bransford was made production supervisor; **Dow E. Slagle**, purchasing agent at the Gainesville, Tex., plant of **National Supply Co.**

Victor Emery was named manager-manufacturers sales, industrial division, **Aeroquip Corp.**, Jackson, Mich. He was marine sales manager and is succeeded by **James I. Mellencamp**.

Frederick H. Norton was elected vice president - sales, **Pittsburgh Forgings Co.**, Coraopolis, Pa. He was sales vice president of **American Car & Foundry Div.**, **ACF Industries Inc.** **Walter H. Stocking**, vice president of **Pittsburgh Forgings**, was elected executive vice president. **William E. Latta** was made manager of the forge division-Coraopolis plant.

Reliance Electric & Engineering Co., Cleveland, appointed **John L. VanNort** regional sales manager for the midwest. He is succeeded by **Robert O. Gee** as manager of application engineering. **George E. Law** replaces Mr. Gee as manager of service. **William C. McConnell**, manager of standard products in the marketing division, becomes manager of general products. At the **Ivanhoe Div.**, **Frank R. Terrant** was made assistant manager of engineering.

Robert H. Isenberg was made plant metallurgist; **John I. Orrison**, assistant plant metallurgist at the **Monessen, Pa.**, Works of **Pittsburgh Steel Co.**

At **Detroit**, **Reynolds Metals Co.** named **Robert J. O'Grady** regional sales manager-automotive; **Fredrick W. Zinnbauer**, automotive engineer; **Ralph L. Harris**, regional sales promotion manager.

John J. Knox was named purchasing agent of **Reading Tube Corp.**, Reading, Pa., He was purchasing director for **Hubeny Bros. Inc.**

Robert R. Johnson, vice president-general manager of **Leader Iron Works Div.**, Decatur, Ill., **Standard Steel Corp.**, was elected a vice president of the parent firm. **K. G. Thies**, sales manager of **Standard Steel**, was appointed contract administrator. **Webb L. Nimick** was named general sales manager in charge of the process equipment and special fabrication division. **Wesley V. Davidson**, assistant sales manager, road machinery division, was advanced to general sales manager of that division.

Frank J. Zielsdorf fills the new post of director of planning at **Oliver Corp.**, Chicago. He was plant manager at **York, Pa.**, for the **A. B. Farquhar Div.**

Vestal W. Wiseman was made plant superintendent, **Gulf States Tube Corp.**, Rosenberg, Tex., subsidiary of **Michigan Seamless Tube Co.**

Dr. Wilbur G. Malcolm, former vice president - marketing, was elected president and chief executive officer of **American Cyanamid Co.**, New York. **Kenneth C. Towe**, former president, is now chairman.

Joseph W. Gallagher was made manager of marketing, special products division, **Lord Mfg. Co.**, Erie, Pa.

Dwight A. Bessmer, vice president of **Timken Roller Bearing Co.**, Can-

ton, Ohio, was elected executive vice president.

Dr. John H. Hoke was made supervisor of the stainless steels section, central research laboratory, **Crucible Steel Co. of America**, Pittsburgh.

William W. Palmquist was named chemical products marketing manager by **National Carbon Co.**, division of **Union Carbide Corp.**, New York. He succeeds **C. E. Ford**, named to the new post of new products marketing manager of **National Carbon**.

Dana Corp., Toledo, Ohio, appointed as assistant chief engineers: **R. R. Furney**, clutch division; **M. M. Schall**, hydraulic transmission division; **R. E. Fletcher** and **Carl Gustafson**, mechanical transmission division.

John H. Williams was made manager of the Los Angeles office of **Torrington Co.** to succeed **William B. Candler**, now assistant sales manager, bearings division, at Torrington, Conn.

W. R. Grace & Co., New York, elected **Hermann Becker-Fluegel** an assistant vice president. He will supervise sales and purchases for the ore and metal department.

G. Cameron Harvey joined the application engineering staff of **Hydro-Line Mfg. Co.**, Rockford, Ill. He was engineering co-ordinator for **Greenlee Bros. & Co.**

Myron L. McCartney was named works manager, distribution transformer department, **Westinghouse Electric Corp.**, at Sharon, Pa. He succeeds **C. E. Hutchison**, named works manager of a transformer plant under construction at Athens, Ga.

AmForge Div., **American Brake Shoe Co.**, New York, appointed **Francis W. Holbrook** marketing manager; **George L. Essig**, sales manager.

Parker Jameson, with headquarters in Dallas, was named by **Republic Drill & Tool Co.** as its district sales manager for the Texas territory. **Republic Drill** is a division of **Avildsen Tools & Machines Inc.**



CARL K. SHANK



EDWIN RHODES



RICHARD KAISER

Dodge Mfg. Corp. assignments

Dodge Mfg. Corp., Mishawaka, Ind., promoted **Carl K. Shank** from general superintendent of manufacturing to works manager. **Edwin Rhodes** was made purchasing agent. **Richard Kaiser** was made plant engineer, succeeding **Paul Jordan**, who was promoted to the new post of director of engineering.

Surface Combustion Corp., Toledo, Ohio, elected as vice presidents: **E. P. Heiles**, controller; **C. Cone**, chief engineer, industrial divisions, Toledo; **J. I. Trimble**, chief engineer, Janitrol Divisions, Columbus, Ohio.

C. Vincent Sciuolo was made assistant manager, cold heading machinery division, **Waterbury Farrel Foundry & Machine Co.**, Waterbury, Conn. He was Cleveland district sales manager.

Fred Barish, manager of the Los Angeles office of **Luria Bros. & Co. Inc.**, will become associated with the New York office in November.

Roy D. Allen was made chief metallurgist at **Republic Steel Corp.**'s South Chicago, Ill., district. He succeeds **Andrew G. Forrest**, recently named assistant to the chief metallurgist in Cleveland.

Thomas E. Clagett was made Detroit district sales engineer for **Wickes Machine Tool Div.**, **Wickes Corp.** He succeeds **J. A. Oeming**, now sales manager, machine tool division.

John S. Worth and **Thomas G. Foulkes** were appointed metallurgical engineers on the staff of **S. J. Cort**, operating vice president of

Bethlehem Steel Co., Bethlehem, Pa. **Albert P. Spooner**, chief metallurgical engineer-steel division, and **Nevil Greenwell**, assistant to manager of research, have retired.

Frederic Shonnard was made superintendent of **Crucible Steel Co.** of America's warehouse in Syracuse, N. Y.

Cochrane Corp. elected **Joseph F. Denton** vice president, New York district sales. He has been manager of the New York district sales office since 1954.

George W. Petruck, service manager for **Clearing Machine Corp.** division of **U. S. Industries Inc.**, Chicago, transferred to the sales staff.

Dexter Folder Co., Pearl River, N. Y., appointed **Ralph F. Mertz** sales engineer for its metal sheet feeders and related equipment.

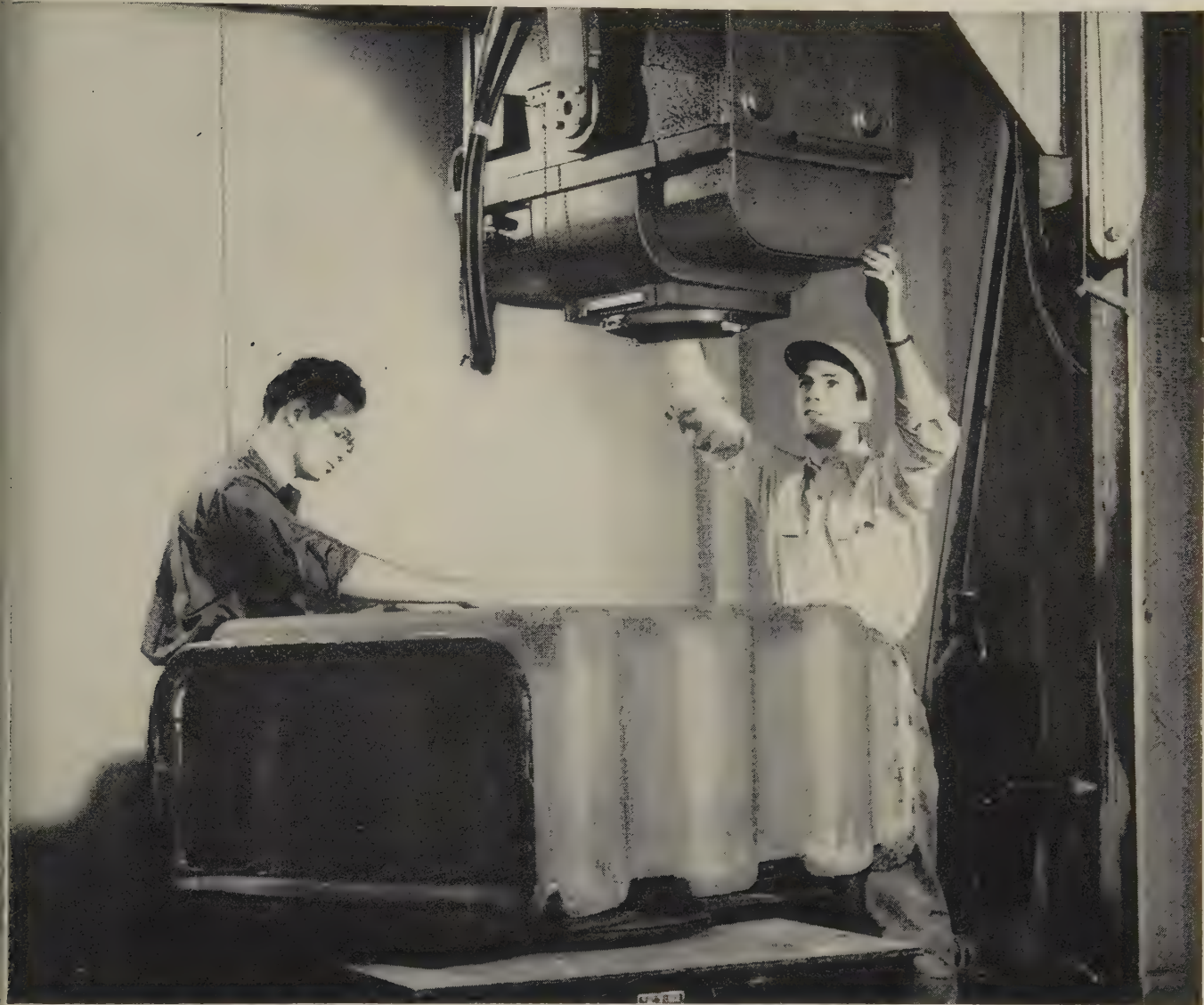
Rotary Lift Co., division of **Dover Corp.**, assigned **Charles E. Redding** to its Detroit factory division. He was at the home office in Memphis, Tenn.

Frank E. Cooper was made purchasing agent at **Kaiser Steel Corp.**'s fabricating division, Montebello, Calif.

Charles P. Burns was appointed to the Detroit sales staff of **Mill Stream Products Co.**, Detroit, and **Kohumel Steel & Aluminum Co.**, Evanston, Ill. He was office manager at Detroit of **Pittsburgh Steel Co.**

Motch & Merryweather Machiner

Another example of THERMALLOY quality control at work*



PREVENTIVE THERAPY

...the next "patient" can be your casting

Trained radiographers x-ray Thermalloy castings, such as pots and muffles, completely . . . not just at points of expected stress. *All* Thermalloy castings must pass x-ray inspection, surface tests or pressure tests, where experience indicates that stress can be normally expected.

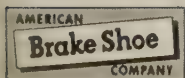
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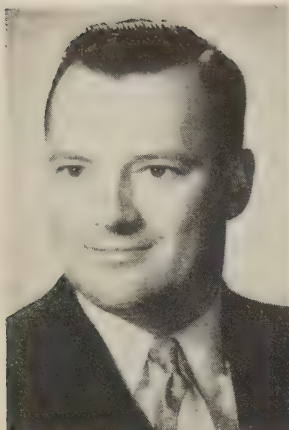
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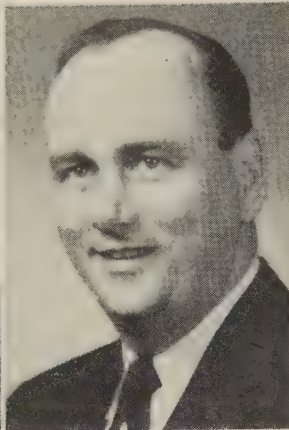




DANIEL R. CHESTER
Archer-Daniels-Midland post



JOSEPH M. JOHNSTON
Victoreen Instrument v. p.



DONALD W. MacLEOD
Elgin abrasives div. post



FRANK E. WHYTE
SKF gen. purchasing agent



EARL C. DAVIS
Parker Appliance promotion



JAMES J. BARRETT
B&W extrusion sales mgr.

Co. appointed **Clarence W. Raufus** assistant district manager of the Cincinnati sales office.

Frank E. Whyte was appointed general purchasing agent of **SKF Industries Inc.**, Philadelphia.

Earl C. Davis was made sales manager, industrial hydraulics division, **Parker Appliance Co.**, Cleveland. Before joining Parker in 1955, he was with **Hydreco Div.**, New York Air Brake Co.

John R. Poyser Jr. was made works manager, **Leece-Neville Co.**, Cleveland.

John R. Perkins fills the new post of assistant to the president in charge of market development for **McDowell Co. Inc.**, Cleveland. He was with **Delco Products Div.**, General Motors Corp.

Ralph R. Calaceto was made manager and sales engineer, Process Equipment Div., **Automotive Rubber Co. Inc.**, Detroit. He is at New York.

James J. Barrett was made manager of extrusion sales, tubular products division, **Babcock & Wilcox Co.**, Beaver Falls, Pa.

R. E. Esch, general manager, international division, **Vickers Inc.**, Detroit, was elected a vice president.

Frank Mosko was made sales manager of **David W. Murray Co.**, Cleveland. He was assistant to the first vice president, **Aetna Standard Engineering Co.**, Pittsburgh.

Norman T. Shideler was elected president of **Insul-Mastic Inc.**, newly acquired subsidiary of Pittsburgh Coke & Chemical Co., Pittsburgh, which is producing for the protective coatings division. **Arthur E. Gray** was named to succeed Mr. Shideler as the division's general manager.

Maj. Gen. Marshall S. Roth, USAF, ret., was appointed assistant to the president of **Richards-Wilcox Mfg. Co.**, Aurora, Ill.

Archer-Daniels-Midland Co.'s foundry products division, Cleveland, appointed **Daniel R. Chester** manager, core binders. He was manager of technical service.

Joseph M. Johnston was elected vice president-manufacturing, **Victoreen Instrument Co.**, Cleveland. He was operations superintendent of both instruments and components divisions.

Donald W. MacLeod was made sales supervisor in charge of **Elgin National Watch Co.'s** Elgiloy, the abrasives division's industrial spring alloy. He is at Elgin, Ill.

Patrick V. Gallagher was elected vice president, **Dwight-Lloyd Division**, **McDowell Co. Inc.**, Cleveland. He was chief engineer.

OBITUARIES...

H. B. Spackman, 58, president and chief executive officer of **Lyon Metal Products Inc.**, Aurora, Ill., died Aug. 20.

William E. Caldwell, 73, chairman, **Cleveland Twist Drill Co.**, Cleveland, died Aug. 23.

Harold C. Hurtt, 44, assistant to the vice president-sales, **Cleveland Twist Drill Co.**, died Aug. 23.

John S. Conway, 51, sales vice president of design, manufacturing, and sales division, **Koehring Co.**, Wilwaukee, died Aug. 17.

Fred J. Coulton, co-founder of **City Pattern Foundry & Machine Co.**, Detroit, and its secretary-treasurer, died Aug. 13.

Charles R. Holzworth, 70, who retired last year as president of **Tonawanda Iron Div.**, **American Radiator & Standard Sanitary Corp.**, died in Buffalo Aug. 19.

C. C. Smith, 80, president, **Waukesha Foundry Co.**, Waukesha, Wis., died Aug. 15.

Harold H. Johnson, director of research, **National Malleable & Steel Castings Co.**, Cleveland, died Aug. 22.

David C. Maxwell, 52, general superintendent of manufacturing at **General Motor Corp.'s** Chevrolet plant in Buffalo, died Aug. 18.

Broadens Research

Expanded facilities for study of refractory materials being built by Harbison-Walker

STUDY of highly refractory materials and the development of processes for converting them into industrial products will be intensified at a \$1-million research center being built by Harbison-Walker Refractories Co., Pittsburgh.

The company has, expanded activities into new refractory product fields (mullite, silicon carbide, and zircon), and its new facilities in several foreign countries have made additional raw materials of great promise available, says Earl A. Garber, president. Harbison-Walker has diversified into the manufacture of molding media or investment materials (for shell molding and precision casting) and magnesium chemicals.

New Fields—Research on refractory monoliths will be intensified to broaden established markets. The use of refractory castables and gunning materials for rocket launching sites and jet aircraft maintenance areas is closely related to the products used for lining catalytic cracking and reforming units in the oil refineries. The company's role in nuclear energy also will be explored more fully.

Laboratory manager for the research center will be D. F. Stock. R. E. Birch is director of research; and E. Ruh, assistant director.

Koppers Gets McLouth Contract

McLouth Steel Corp., Detroit, awarded a contract to Koppers Co. Inc., Pittsburgh, to design and install a gas cleaning system at its Trenton, Mich., plant. It's for the firm's oxygen process steel installation.

Gardner-Denver Expands

Gardner-Denver Co. has completed the major part of an extensive expansion of foundry facilities at its main plant. Additions include: A new brass foundry; new sections in the iron foundry for cleaning castings and floor molding work; a core oven room; lockers and washup facilities. The

building and equipment involved an outlay of some \$500,000.

Installs Sendzimir Mill

Eastern Stainless Steel Corp. will soon start full scale operations on its new Sendzimir mill and supporting equipment at its Baltimore plant. The installation is expected to increase the mill's annual production by about 50 per cent. The cold reducing mill produces stainless steel up to a maximum width of 48 in. and from 0.078 in. down to a present minimum of 0.007 in.

Will Process Stainless Scrap

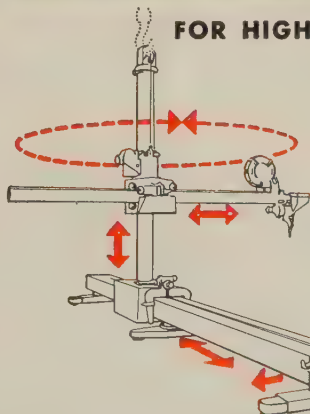
Stainless & Alloy Corp. of America has been organized for the processing of nickel-bearing scrap metals. The firm purchased the plant and equipment of Stainless Scrap Corp., Greenville, Pa. The main office is at 741 South Ave., Youngstown, Ohio. Additional facilities, primarily in the melting and analysis departments, are planned. Officers are: President, L. A. Kirtz; vice president-operations, F. A. Travis; vice president-

(Please turn to Page 118)



automatic
why not use your *head?*

and a **LEWIS "UNIVERSAL"**



FOR HIGHER PROFITS WITH AUTOMATIC WELDING

Automatic welding cuts costs because it is faster, more accurate, more dependable. But . . . the real key to greater savings lies in the automatic welding head manipulator.

"Universal" manipulators, designed and manufactured by a weldment fabricator, are the only *fully portable and adjustable* machines of their type. They can be set-up quickly wherever crane facilities permit . . . position any automatic head rapidly . . . pilot heads at proper welding speeds . . . operate with machine tool accuracy.

That's why LEWIS "Universals", track or pedestal types, assure greater cost savings and profits in automatic welding jobs.

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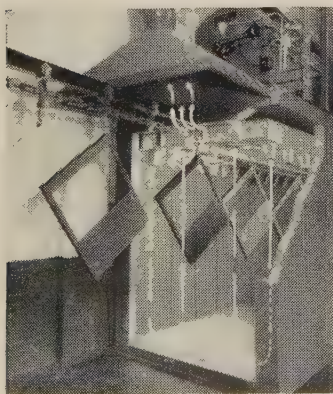
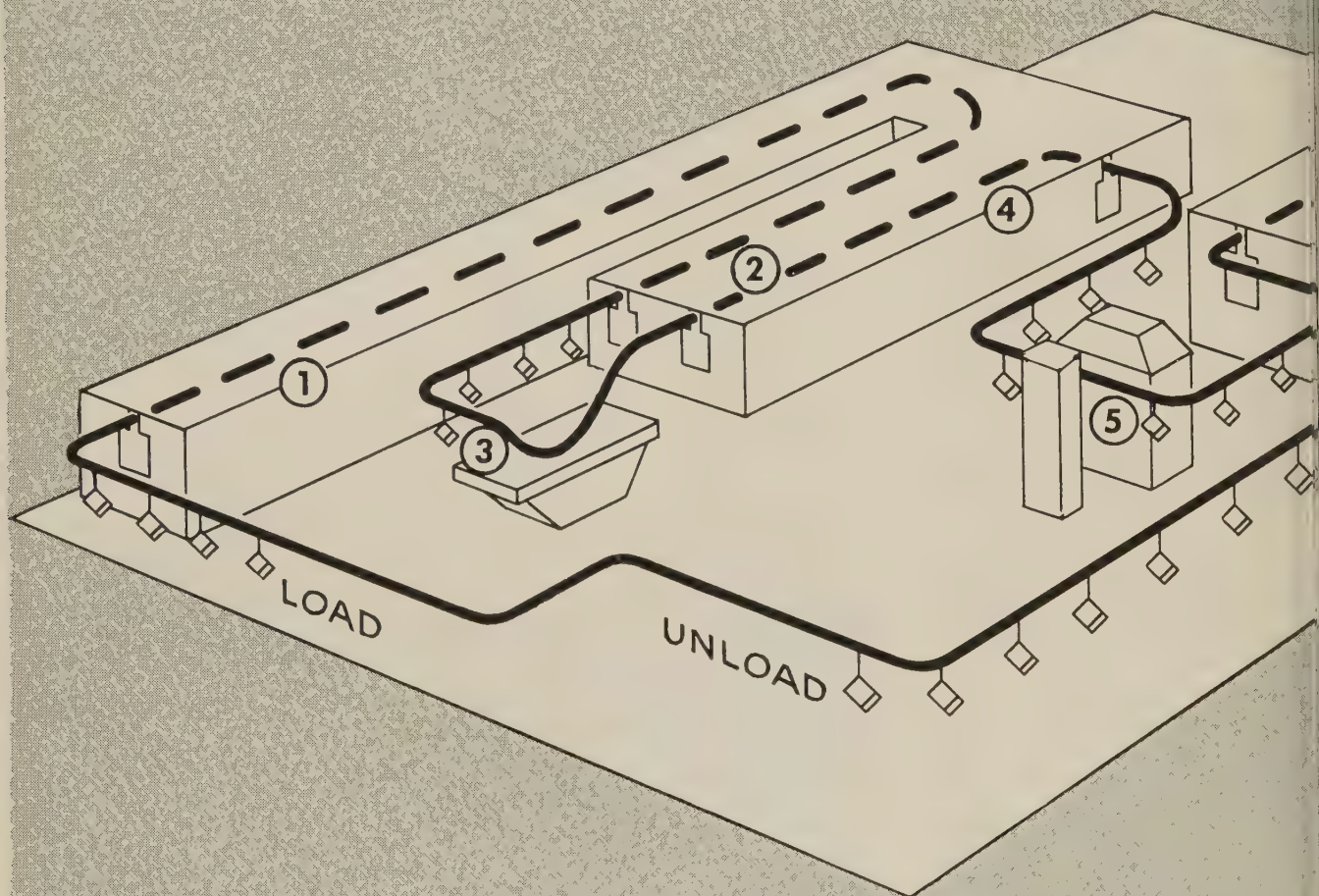
WELDING DIVISION

103 NORTHFIELD ROAD

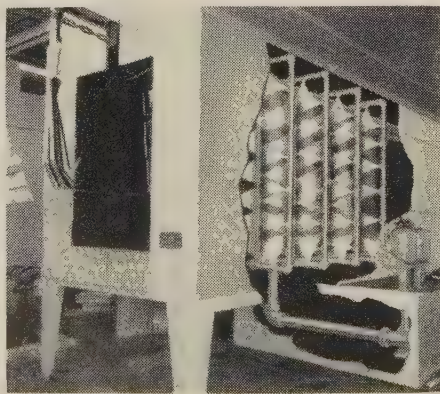
BEDFORD, OHIO

SPECIALISTS IN WELDMENT FABRICATION AND PRECISION WELDING EQUIPMENT

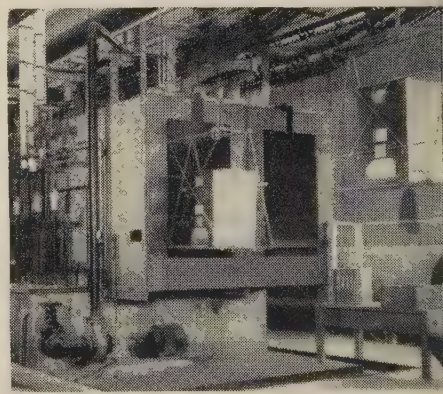
DeVilbiss announces a New ar



NEW! Industrial Ovens



NEW! Parts Washers



NEW! Multi-Stage Metal-Treating U

Expanded line of finishing equipment

Now, through its new subsidiary—Newcomb-Detroit Company—DeVilbiss emerges as the only "one-source" company that designs, manufactures and installs complete painting systems for all major types of finishing operations.

WHATEVER you manufacture—giant aircraft or miniature lamp filaments—now you can get *all* your coating and finishing equipment from a single company . . . DeVilbiss!

Supplementing its complete line of spray equipment, DeVilbiss now offers industrial ovens; flo-coaters and dip-coaters; automatic washers for parts cleaning, metal treating, and spray pickling; dust collectors for grinding, polishing, and metal-finishing operations; and complete systems, custom-designed or built-up from standardized components.

These facilities offer important advantages to you: one-source responsibility for product quality, performance, operational efficiency; matched equipment for fully integrated systems; and individual finishing units backed by diversified design and manufacturing experience.

Engineering, installation and service facilities are available from coast to coast. So when planning to build, expand or remodel your finishing system—or replace any component in your present operation—call in DeVilbiss.

DeVilbiss' experience in the design, manufacture, and installation of systems like this, means you save in cost and operation; benefit in performance and product quality.

1. Phosphatizing Unit
2. Dry-off Oven
3. Dip Tank
4. Prime Coat Bake Oven
5. Automatic Spray Machine
6. Finish Coat Bake Oven

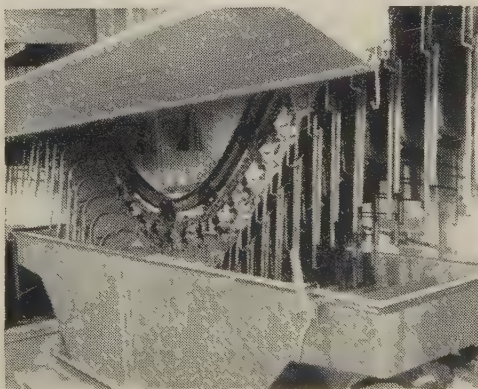


THE DEVILBISS COMPANY, TOLEDO 1, OHIO

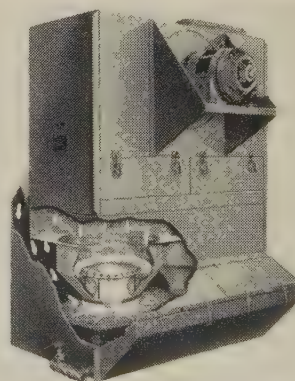
Barrie, Ontario • London, England • Branch Offices in Principal Cities



NEW! Flo-Coaters



NEW! Dip-Coaters

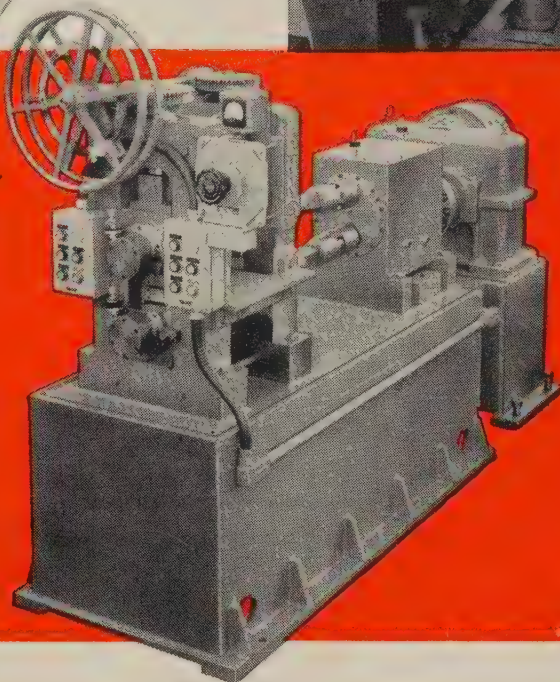


NEW! Dust Collectors

**a pinch
that pays
on stainless
steel**

PACE Pattern
Stainless Courtesy
Stegor Division
Gorham Company

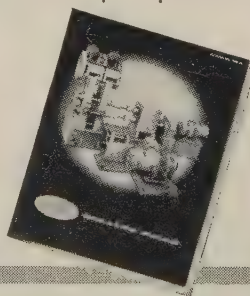
**Fenn
Rolling Mill
Model 051
2 high
pinion drive**



FENN ROLLING MILLS, because of their flexibility and dependability, have been adopted as standard mills in many vertical segments of the metal working industry. In the manufacture of flatware, for example, Fenn rolling mills are in use by nearly every major producer. These mills are specifically designed to meet the flatware manufacturers' precision requirements for grading, pinch rolling and cross rolling.

The Fenn Model 051 mill, shown above, is in operation at the Stegor Division, The Gorham Company, Providence, R. I. In a two-pass operation, .095 ga. tableware blanks of 430 stainless steel are pinch rolled with .027" reduction taken on the first pass, and .013" reduction on the second. Production rate is more than 200 pieces per hour with dimensional tolerances held to $\pm .001$ ".

For complete information on Fenn Rolling Mills write for Catalog RM 56 or, better still, let Fenn engineering service study your requirements for specific recommendations.



Rolling Mills

THE FENN MANUFACTURING COMPANY 404 FENN ROAD, NEWINGTON, CONNECTICUT

(Concluded from Page 115)
purchasing, Ray St. John; secretary-treasurer, S. L. Greenberger.

Installs Vacuum Furnace

Hollywood Heat Treating Co., Los Angeles, installed what is said to be one of the largest vacuum heat treating furnaces available in the private industry. It is 99 in. in diameter by 10 ft deep and will accommodate a retort with an effective working zone of 55½ in. by 9 ft. It will reach about 2200° with a vacuum of 0.1 micron.

Bethlehem To Erect Building

Bethlehem Steel Co., Bethlehem, Pa., will erect a multimillion dollar building for a new printery and account unit on a 53-acre tract on Eighth Avenue near Eaton Street in that city.

Bucyrus-Erie Buys Furnace

Bucyrus-Erie Co., South Milwaukee, Wis., awarded a contract to Gas Machinery Co., Industrial Furnace Div., Cleveland, to install four gas fired, box type heat treating furnaces at its plant in Erie, Pa.

Ohio Knife Enlarges Facilities

Ohio Knife Co., Cincinnati, installed a heat-treating furnace which can harden products up to 240 in. long in one operation. The firm operates more than 20 furnaces.



NEW PLANTS

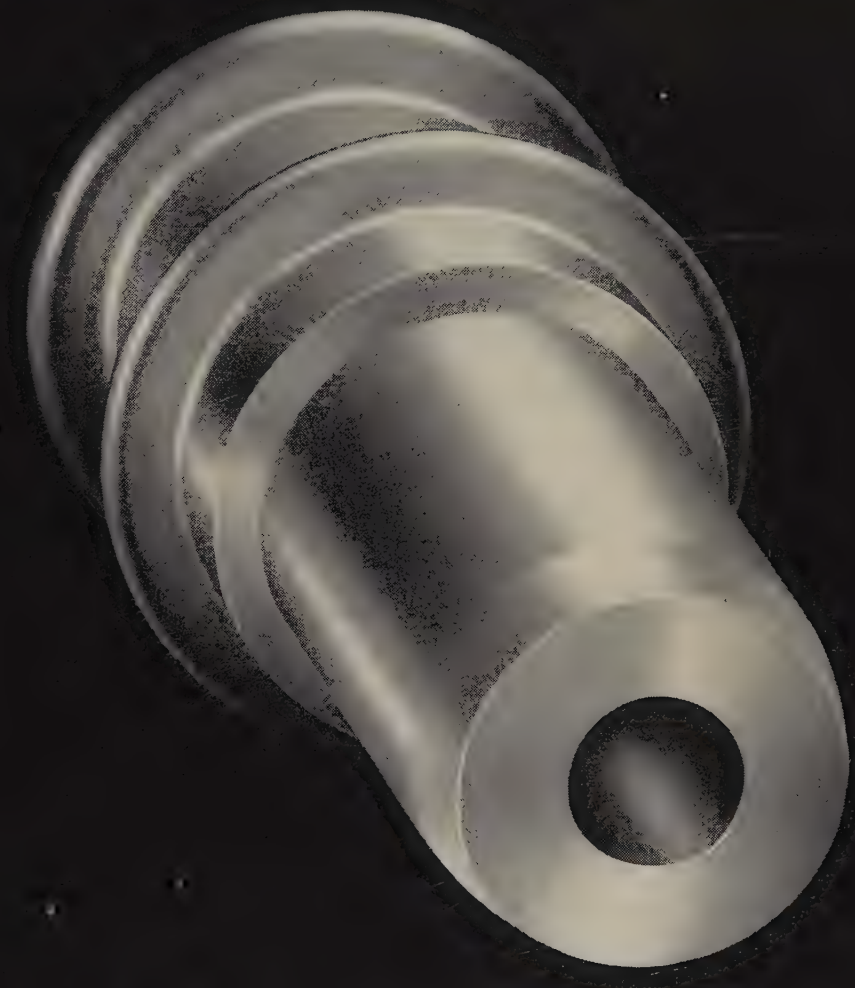
Ampco Metal Inc., Milwaukee, producer of aluminum bronzes and products of this alloy, will build a \$200,000 branch foundry at Garland, Tex. Expected to be in operation by March, 1958, it will include sand and centrifugal foundries, heat treating facilities, and some machining operations.

Air Filter Corp., Milwaukee, is constructing a 25,000 sq-ft plant which will double plant capacity.

G & H Products Corp. is building a \$300,000 plant at Kenosha, Wis. Production is scheduled for

MACHINING PERFECTION always starts with the right steel

*Pick exactly the right steel for any job
from J & L's complete cold finished line*

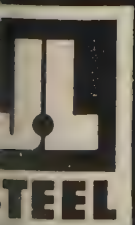


***"Manufacturer saves three ways
with J & L 1113 Bessemer steel"***

This friction shaft part for a textile machine was converted to J&L "1113" Bessemer steel with these results:

- Time cycle reduced 20%
- Surface finish improved 20%
- Tool life increased 100%

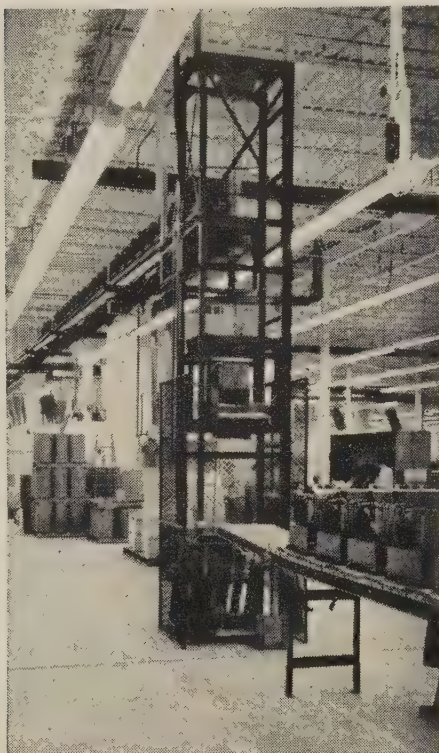
Due to these savings, manufacturer is now using J&L "1113" steels for other applications. You can get similar savings in cutting speeds and tool life. Get facts from your distributor or write to Jones & Laughlin, 3 Gateway Center, Pittsburgh 30, Pennsylvania.



Jones & Laughlin
... a great name in steel

Ask Standard

*how to
cut costs
with
conveyors*



Standard limit-switch-controlled Automatic Reciprocator is one of two used to form 200-ft. overhead detour of dehumidifier assembly line.

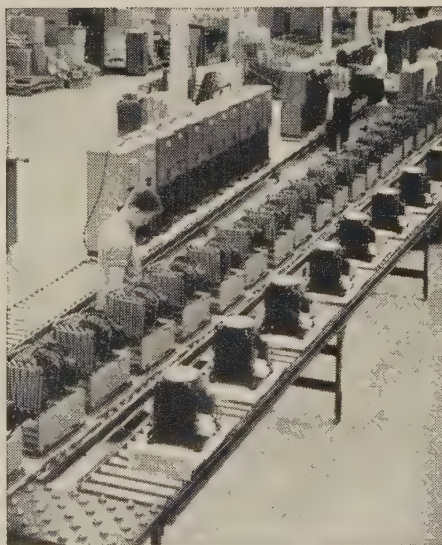
"COMPLETE CONVEYORIZING" ...what it did in a smaller plant

Products at Ebco stay on conveyors until packaged and sent to shipping.

Ebco Manufacturing Company — employing 275 people to produce water coolers, beverage dispensers and dehumidifiers — has realized substantial savings by completely conveyORIZING their operations. Ebco engineers planned for an orderly conveyor system when developing plant layout and building design; consequently conveyor system costs were kept "low" and resulting efficiency is "excellent."

Similarly, it will pay you to take another close look at your present conveyor system. Standard specialists will be pleased to help you make evaluations... recommend the proper equipment and its application to meet your specific needs.

STANDARD CONVEYOR COMPANY, North St. Paul 9, Minnesota. Sales and Service in Principal Cities.



Gravity roller conveyors like this, used for Ebco's assembly lines, are inexpensive, easy to set up, and economical to maintain.



For details on Standard Conveyors of all types, contact the Standard representative listed in your classified phone book or write direct. Ask for Bulletin Y-9.



start about Nov. 1. The firm makes stainless steel fittings for dairy, food, and chemical industries.

Paragon Electric Co. will build a \$400,000 plant at Two Rivers, Ont. The building will replace five plants and warehouses in that city and will nearly double the firm's present space.



NEW OFFICES

Kaiser Aluminum & Chemical Sales Inc., Oakland, Calif., opened a branch sales office at 438 Old St., San Diego, Calif. J. T. Wavies is branch manager.

Midcontinent Tube Service Inc. distributors of carbon and alloy steel pipe, tubing, valves, and fittings, will occupy newly acquired property at 2120 Lee St., Evanston, Ill., on or about Oct. 1.

Allmetal Screw Products Co. Inc., Garden City, N. Y., opened headquarters for its Midwest Division at 5611 W. Lake St., Chicago 44, Ill. The operation will be headed by Tom Schaid. The firm makes stainless steel fasteners.



ASSOCIATIONS

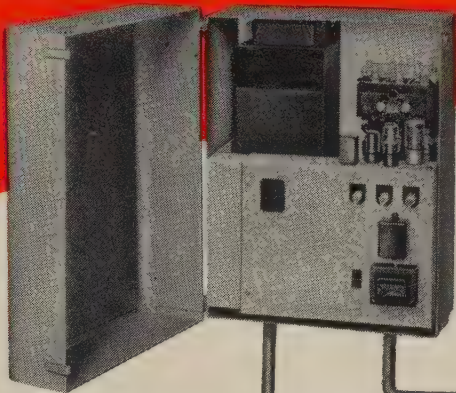
Environmental Equipment Institute, Princeton, N. J., elected these officers: President, E. S. Brown; Standard Cabinet Co., Carlstadt, N. J.; executive vice president, R. J. Jacobson, Cincinnati; Zero Products, Cincinnati. M. G. D. Wilkinson is general manager.

Institute of Environmental Engineers, Princeton, N. J., elected these officers: President, H. Sander; Vapor Heating Corp., Chicago; and executive vice president, R. J. Amorosi, Parametters Inc., Garden City Park, N. Y.

Don A. Leahy, Allison Steel Mfg. Co., Phoenix, Ariz., was elected president of the Phoenix Control of the Controllers Institute of America, New York. H. M. Snodgrass, Tennessee Coal & Iron Div., U.



Drive Package Provides Infinitely Adjustable Speeds from AC Power Source



CONTROL
PANEL



CONTROL
STATION

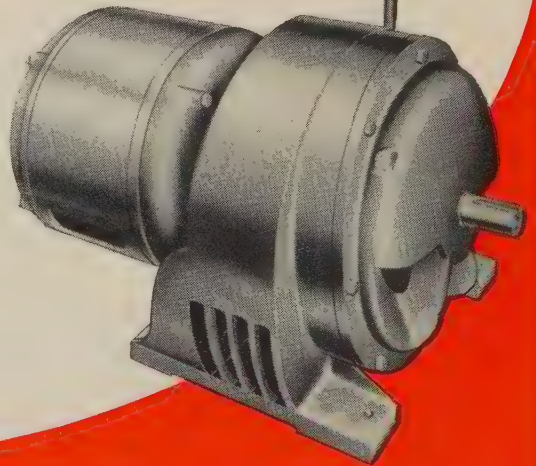
The complete Dynamatic power package includes all components required to provide infinitely adjustable speeds from an alternating current power source. A Dynamatic Ajusto-Spede® or Dynaspede® Drive, with electronic control and pushbutton station, satisfies the requirements of almost any application where proper machine operation or material processing depends upon control of operating speeds.

The compact control panel may be remotely mounted to conserve valuable space on the driven machine. The pushbutton station at the operator's position puts vital controls conveniently at the operator's fingertips and requires a minimum of space.

Speeds are infinitely adjustable from 0 RPM to full output speed, and accurate speed regulation may be obtained from 100 RPM to full output speed.

Ajusto-Spede® Drives, available in ratings of $\frac{1}{4}$ horsepower to 75 horsepower, are air-cooled. Dynaspede® Drives, rated from 3 to 75 horsepower, are liquid-cooled. Raise your productive efficiency with Dynamatic eddy-current units.

DYNAMATIC
AJUSTO-SPEDE DRIVE



*Send for Illustrated Literature Describing
Dynamatic Adjustable Speed Drives*

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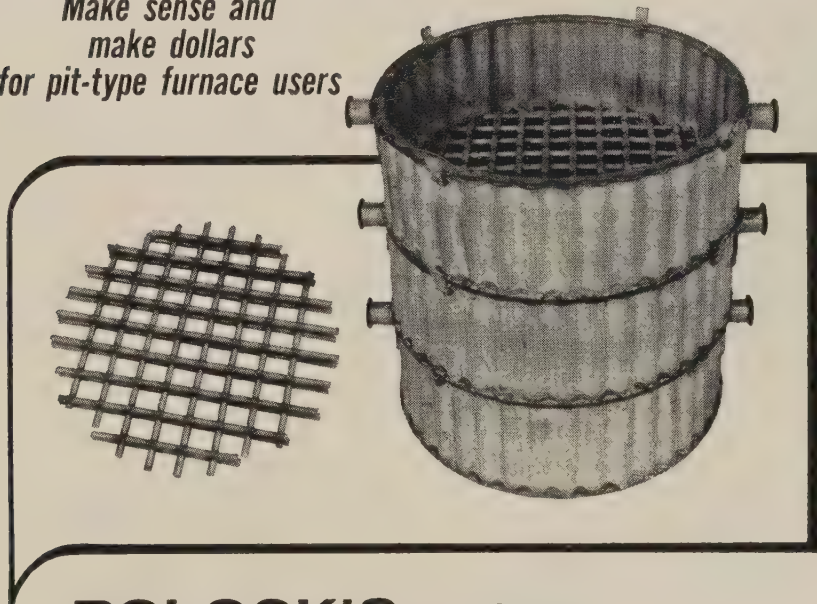
ROLOCK

FABRICATED

ALLOYS

HEAT AND CORROSION
RESISTANT

*Make sense and
make dollars
for pit-type furnace users*



ROLOCK'S unique CORRUGATED construction

with pressure-welded truss-type grids

There are many good reasons why these new furnace baskets out-perform and outlast older types. ROLOCK's Corrugated Construction gives high strength with light weight and this, in turn, means less material to bring up to temperature with faster, more uniform heat transfer . . . and a higher ratio of pay load to basket weight. Such baskets mean a substantial saving in furnace time because of faster recovery and, in some cases, an increase in average load as well.

ROLOCK's specialized Welded Fabrication takes full advantage of this construction in every respect. The grid, for example, is built up from rounds rather than flats by a ROLOCK-developed pressure-welding method. Experience shows that such grids are far better able to withstand thermal shock. They may be reversed as required, to compensate for deflection, without cracking.

In this field, as in many other specialized applications of welded-fabricated heat-resistant alloys, ROLOCK's exceptional facilities and skills often promise major operating savings. Write us outlining your problems.

SALES & SERVICE FROM COAST TO COAST

ROLOCK INC., 1262 KINGS HIGHWAY, FAIRFIELD, CONNECTICUT

JOB-ENGINEERED for better work
Easier Operation, Lower Cost

6RL57

Steel Corp., Fairfield, Ala., was similarly honored by members of the Birmingham Control.



NEW ADDRESSES

General Machinery Supply Co. moved to a new \$150,000 office and warehouse building at 168 14th St., Oakland, Calif. The firm distributes tools, threaded fasteners, and contracting supplies, including plumbing and electrical.

DeVilbiss Co., Toledo, Ohio moved its direct factory branch in Atlanta to 1100 Northside Drive N.W. Roy Steele is divisional sales manager.



CONSOLIDATIONS

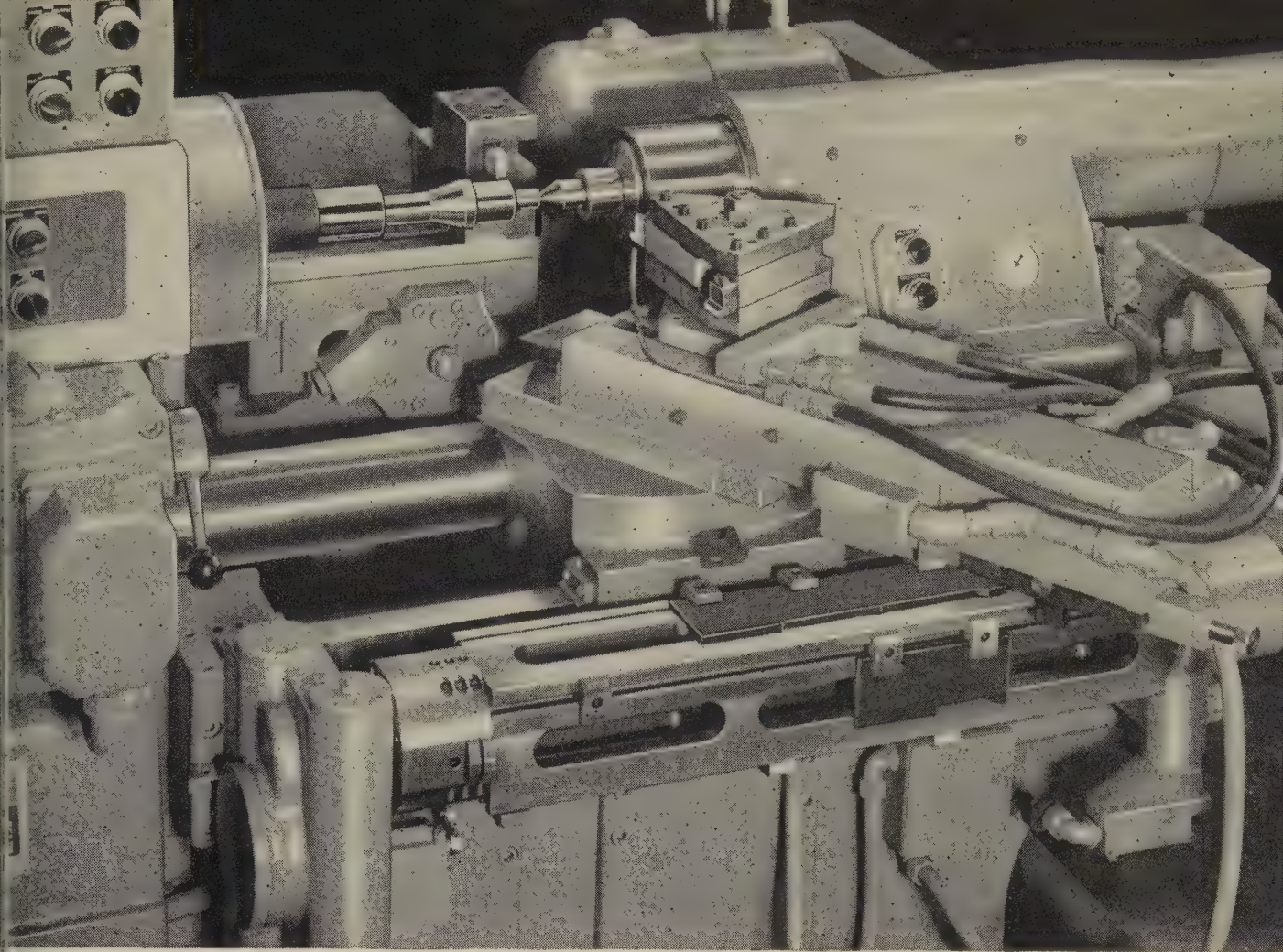
American Commercial Barge Line Co., Jeffersonville, Ind., has been formed through merger of American Barge Line Co. and Commercial Transport Corp. It will operate on a river system covering an area extending from the Great Lakes to Mexico.

Parks Electronics Corp., Redwood City, Calif., purchased Henry Francis Parks Laboratory, Portland, Oreg., and Redwood City. A 6300 sq-ft plant has been leased for five years and has been equipped with research and production facilities.

Texas Eastern Transmission Corp., Shreveport, La., acquired La Gloria Oil & Gas Co., operator of an oil refinery at Tyler, Texas, and a natural gas processing plant at Falfurrias, Tex.

Chas. Pfizer & Co. Inc., New York, acquired Morton - Withee Chemical Co., Greensboro, N. C. producer of chemical specialties for the petroleum, rubber, and plastics industries.

Vulcan Materials Co., Birmingham, has acquired Union Chemical & Materials Co., Pittsburgh, subject to stockholders' approval. Vulcan can also acquire Lambert Bros. Knoxville, Tenn.; Ralph E. Mill (Please turn to Page 126)



IN AN AUTOMATIC LATHE?

imilar parts — you get even greater flexibility from No. 12 through auxiliary slides, operated by movement of the standard slides. Or you can mount back facing attachment within the spindle—for another way to machine a maximum number of faces in one chucking. And for outstanding versatility with great savings in tool and setup costs, front carriage on the No. 12 may be replaced by single- or four-pass JETracer slide.

For complete details of the new features on the Gisholt MASTERLINE No. 12 Automatic Production Lathe, call your Gisholt Representative.



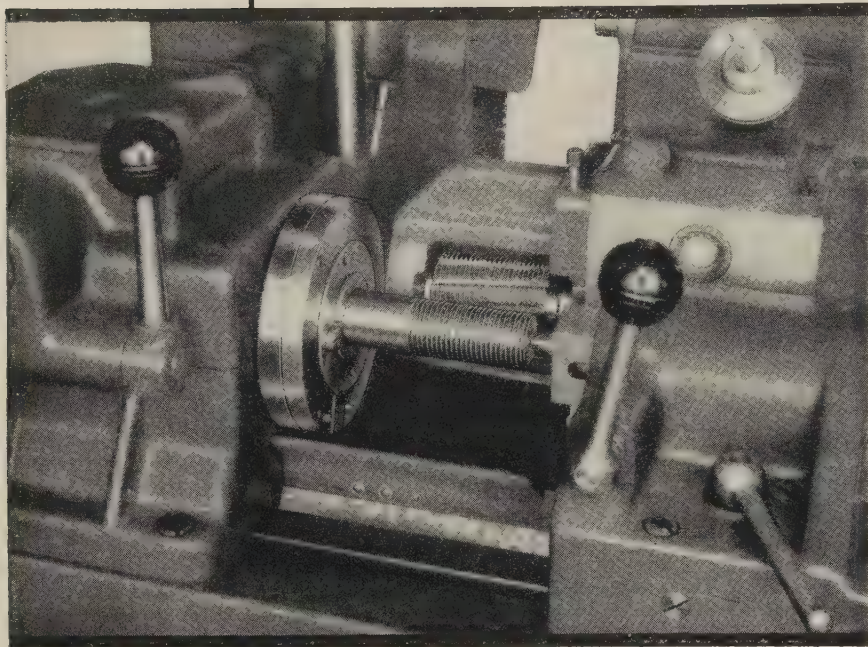
WRITE GISHOLT TODAY for advance data on the new Gisholt MASTERLINE No. 12 Automatic Production Lathe. Ask for Form 1178.

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ONE GOOD TURN



Hanson-Whitney Thread Milling Machines produce precision threads with *one turn* of the work. Featuring precision cutting of internal or external, straight or taper, left or right hand threads, H-W's great versatility boosts your production profit.

The Hanson-Whitney Thread Milling Machine features an exclusive cam design eliminating back lash, and providing a full automatic cycle for lead and depth plus rapid retraction, which speeds gaging and loading.

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TAPS : THREAD GAGES : HOBS : CENTERING MACHINES : THREAD MILLING MACHINES AND CUTTERS

(Concluded from page 122)

Co., Frankfort, Ky.; Brooks San & Gravel Co., Kingsport, Tenn. Wesco Paving Co., Chattanooga, Tenn.; and several other firms affiliated with these companies.

Federal Machine & Welder Co. Warren, Ohio, purchased controlling interest in Berkely-Davis Inc. Danville, Ill., builder of automatic arc welding equipment.

Ling Electronics Inc., Los Angeles, acquired American Microwave Corp., North Hollywood, Calif. Fred W. Bailey will continue to direct operations of the new subsidiary.



REPRESENTATIVES

Vulcan Crucible Steel Div., H. Porter Company Inc., Aliquippa, Pa., appointed Harbor Steel Supply Corp., Muskegon, Mich., as a distributor for its tool steel products.

Calumet & Hecla Inc.'s Wolverine Tube Div., Detroit, appointed G. Wallace as its sales representative in the northern Texas and Oklahoma area. His headquarters will be in Dallas. The division also appointed Robert Allan as sales representative in Grand Rapids, Mich.

R. N. Kendall, vice president of Colonial Broach & Machine Co., Detroit, is moving to Milwaukee to take direct charge of the area. The firm appointed these representatives of its Colonial-Romulus Division: E. W. Brock Co., Cincinnati; Eaton Co., Hackensack, N. J.; and Geoffrey-Lane Inc., Denver.

Wilson Petrolcoke & Carbide Corp., New York, has been appointed sales representative for the new metallurgical coke produced by the Colorado refinery American Gilsonite Co., Salt Lake City, Utah. The company will handle all foreign and domestic sales to electrode, carbide, and steel manufacturers, and to the aluminum industry abroad. Company sales to the aluminum industry in the U. S. and Canada will be handled directly by American Gilsonite Co.

Technical Outlook

STEEL

September 2, 1957

S. MACHINABILITY—Between 0.20 and 0.25 per cent copper in cold finished steel bars increases machinability by about 10 per cent, says Allegheny Steel Co., Hammond, Ind. Tests of the material, called Stressproof with copper, show improvements in tool life (some last 2½ times longer than those used on bars without the copper); increased resistance to corrosion; better ductility and elasticity; and reduced brittleness. Sulfide additives, silicon, furnace treatment, and an unusually great mill reduction (heavy drafting) are also responsible for improvements. A patented die controls deformation forces, reducing warping and cracking.

GERMANY TRANSISTOR—General Electric has unveiled its new 85-watt transistor, one of the most powerful available. A silicon device, it operates on 65 volts, is expected to find applications in direct current to direct current and alternating to direct current converters; in vacuum amplifiers for autopilots and engine controls; in power supplies as series regulators; and in replacement of mechanical contactors and switches.

SQUARE IRON—General Electric Research has developed an improved sheet material for transformers, motors, and generators. Called four-core silicon iron, it is easily magnetized in four directions. Expected benefits: Lower energy losses and fewer noises in electrical equipment.

LD FACE IT—A dip is sufficient to coat many metals with 24-carat gold, say the developers of a process called Atomex. It's said to have these advantages over electroplating: Water density achieves same appearance with 50 per cent less gold; all parts (even blind holes) receive coatings which are equally

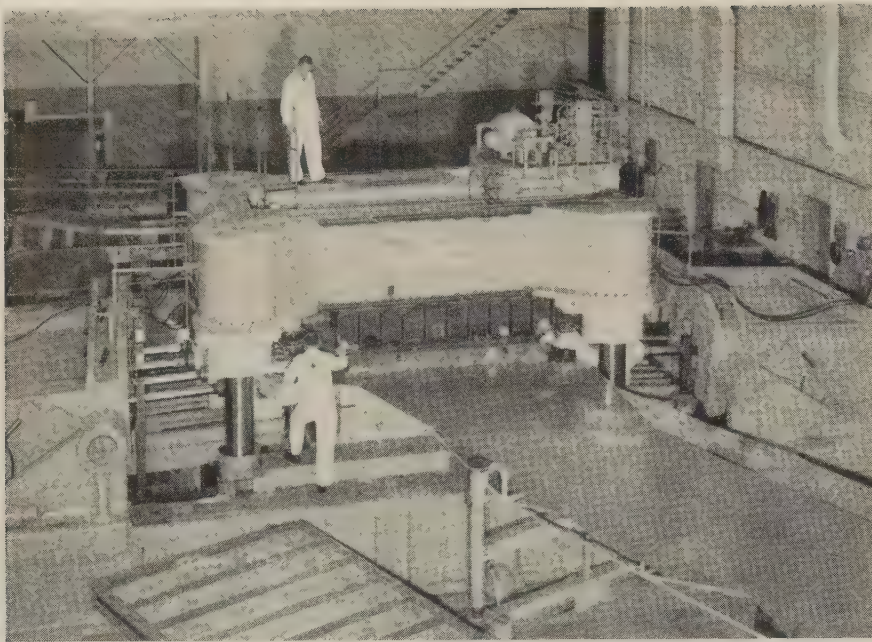
thick; gold interlocks with base metal; bath control is unnecessary; and spent solution can be thrown away since all the gold in it can be used up.

CUT-RATE RADIOACTIVITY—Industry now can get Cobalt 60 for 50 to 70 per cent less, says Nuclear Systems, division of Budd Co., Philadelphia. Its principal value is in thickness gaging, radiography, and research. The announcement affects all sources up to 50,000 curies.

TITANIUM CASTING PREVIEW—Recent Air Force research puts the finger on molybdenum aluminide (Mo_3Al) as a promising material for a better refractory mold for titanium. Although wet by titanium during melting, the report says, only 3 per cent of the molybdenum and aluminum is taken into the melt. Time and temperature must be held to a minimum.

OXYGEN GROWS—The top blown oxygen converter, which got its start in Linz, Austria, only a few years ago, has already spread to 15 plants in nine countries. (Probably more.) Kaiser Engineers Div. of Henry J. Kaiser Co., Oakland, Calif., which holds U. S. licensing rights, says the official name is now the "L-D Process," which a lot of people have been calling it anyway. Kaiser's estimate for world-wide L-D production in 1958: 7 million U. S. ingot tons.

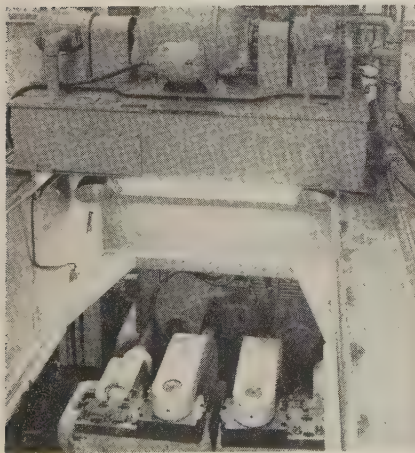
DIAMONDS IDENTIFIED—A uniform national code for diamond wheel shapes is available, says the American Standards Association, New York. The code can be easily applied to practically all shapes. A similar project for the dimensions of diamond abrasive wheels is underway.



Preshaped aluminum sheet, 50 ft long, overhangs the press. Contour is formed only at the root end. Jaws grip sheet sides to hold for stretching

Press Stretches Jet Parts

Said to be the world's largest, this stretch press puts a contour in the root of wing panels for Douglas' DC-8 jet airliner. Part weight is about 1200 lb



View down into top of press shows huge gripping jaws

TAKE a partially folded piece of paper and try to figure out how to get the folded edge to take on a broad curvature. That's the prob-

lem that faced engineers at Douglas Aircraft Co. Inc., Long Beach, Calif.

The part is a wing panel for the company's new DC-8 jet airliner. Panels are made from tapered aluminum sheets which are 50 ft long and 10 ft wide at the root. The sheet is nearly $\frac{1}{4}$ in. thick at its heaviest section.

Here's How—Sheets are rough trimmed and bent, then go to a specially built Sheridan stretch forming machine. In the press, the bend is centered over a form-die ram. Clamping jaws grip the sides of the sheet with a force of 1200 tons.

Four hydraulic cylinders, each with a pulling capacity of 150 tons, pull on both sides of the sheet. A single cylinder rated at 456 tons lifts the die table (ram) into the

sheet, forcing the stretched section to take on the required contour.

A holding fixture beside the machine supports the some 35 ft length not formed in the press.

The Press—At a recent Vickers hydraulic conference, Carl Blanchard, chief engineer for the press builder (Sheridan-Gray Inc., Torrance, Calif.) described the all-hydraulic power system. Presses range from 2000 psi in the tension cylinders and die table to 7500 psi in the jaw gripping cylinders.

"Each tension cylinder," Blanchard says, "is positioned in its own closed loop servosystem. It consists of a potentiometer and an electronic amplifier. The error signal goes to an electrohydraulic servovalve which ports the cylinders directly."

The feed back loop uses a second potentiometer with its shaft positioned through a mechanical connection by the jaw. This closed loop system positions the jaw within $\pm 1/64$ in.

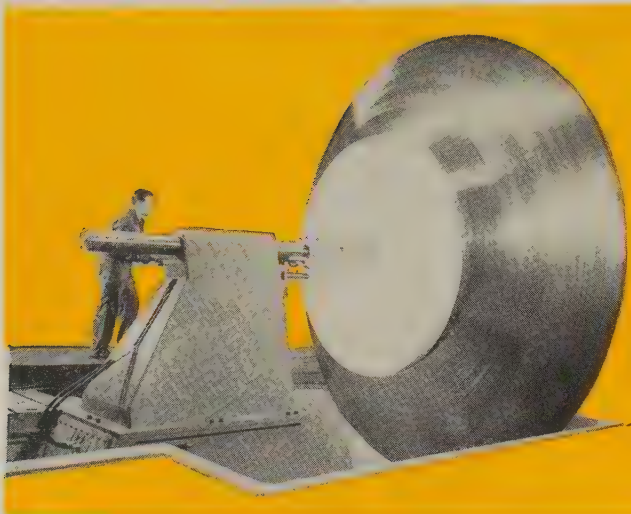
Leveler — An upper clamping power unit, mounted on the structure, supplies fluid to all four hydraulic cylinders simultaneously. Since there are no exterior guide posts or gibs, the piston rods must serve that purpose. Fluid flow then, must be divided equally between the four cylinders to prevent cocking or binding on the piston rods.

Flow from the central pump source goes through four fluid motors whose output shafts are connected. The motors are bypassed at the end of the up stroke each cycle, and the cylinders "bottomed out." This allows slight differences in motor rates and serves to level the structure. Pressure used in the system is 500 psi until the part is clamped. It then is boosted to 5000 psi.

Problems—The major problem, according to Mr. Blanchard, is one of leak prevention. All pressure lines are welded. Special piloted flanges are used at all inner ports. Tubing is flared to stainless steel fittings are welded to special manifold blocks.

Since aircraft type servovalves are in the system, cleanliness is critical. Sheridan engineers incorporated filters, rated at 4 to 5 microns, at the main pump.

production ideas



Spinning Keeps Pace with New Technology

One of the simpler production techniques, it's still the best way to form many parts. New developments, notably automatic methods, have piled up added advantages

METAL SPINNING has been described as a low cost, low and medium volume, high quality production technique. In this era of high competition, it is worth a second look.

The principles of spinning are centuries old, but the ways it is being used are new. Typical spun parts: Conical, spherical, and cylindrical shapes for jet aircraft and missiles; electric motor housings and covers; food processing equipment; fan and blower parts.

Spinning Defined—Essentially, it is the pressure forming of metal—on a rotating chuck or die. The part must be concentric.

Originally, all spinning was done with hand held forming tools; the material that could be spun was limited to the highly ductile metals, such as copper and aluminum. The new technology demands less ductile metals like the stainless steels; new spinning techniques will handle them.

Some metals are spun hot to increase their plastic flow. Usually,

a torch is mounted on the spinning lathe and directed on the metal. Many alloys, such as some stainless alloys, titanium, and magnesium, must be spun hot to make them ductile enough to work. Heavy sections of easier-to-spin metals usually are spun hot so they can be handled better.

When higher forming pressures than can be obtained manually are needed, a hydraulic ram or mechanical means are used. This method often is used for flanged and dished heads, covers, and similar pieces when quantities are large enough to warrant higher setup costs. It also is used for cold forming of large diameter, heavy sections where hot spinning would be impractical.

New Developments—Power spinning on such machines as the Hydrospin (made by Cincinnati Milling Machine Co., Cincinnati), and the Floturn (made by Lodge & Shipley Co., Cincinnati), differs from how it's done with other methods. The automatic machines

form ductile metals into conical, spherical, curvilinear, and cylindrical shapes by displacing metal under high pressure.

A third machine (Spin-Forge, made by Hufford Corp., El Segundo, Calif.) combines the features of a vertical spinning lathe and power spinning. Opposed rollers are fed down a form hydraulically, forcing the metal to conform to a die. Roller travel in all directions is controlled by a tracer which follows templates. A closed TV circuit provides a close-up view from a remote operating location. It protects an operator in case of part failure.

Application—A rocket part being spun by Commercial Shearing & Stamping Co., Youngstown, starts as a circular blank 18 in. in diameter and 1 in. thick. The material is 1020 carbon steel. Commercial preforms the part on its heavy stamping presses before spinning on a Hydrosin machine.

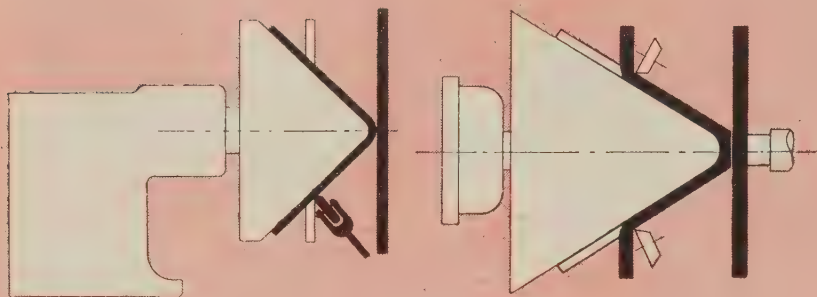
The spun part is a truncated cone about 12 in. long. Large end diameter is 11 $\frac{7}{8}$ in.; small end diameter is slightly under 5 $\frac{5}{8}$ in. The wall thickness tapers toward the large diameter. Finish machining on the part includes threading the small end, drilling two holes, and tapping one of them. Originally, the part was made as a forging and required considerable ma-

How Spinning Methods Differ

In both manual and automatic spinning, the workpiece is forced to take the shape of a rotating chuck or mandrel.

MANUAL

AUTOMATIC



MANUAL METHOD, the metal is formed over the hardwood or steel chuck, with a hand-held tool that may or may not have a metal, fiber, or plastic roller on the end. To form some of the less ductile metals, hydraulic powered or mechanical forming tools may be used. There is little or no thinning out of the metal during forming; blank diameter must be large enough to make up for the depth of the finished part

AUTOMATIC SPINNING, the workpiece is squeezed against the hardened steel mandrel by one or two hardened steel rollers and stretched as the rollers travel along the mandrel's length. The metal undergoes shear deformation, resulting in elongated grain structure. Blank diameter usually is the same as finish diameter; material for the depth of the part is obtained from the blank thickness

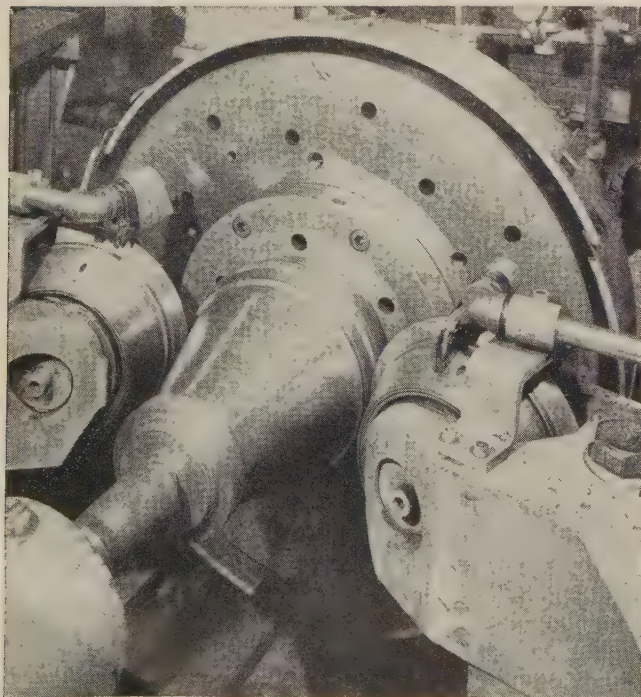
chining. Spinning costs less.

Each Has Its Place—Although power spinning is the newest phase of this production method, manual methods account for the greater volume of parts. It is still the economical way to form many parts.

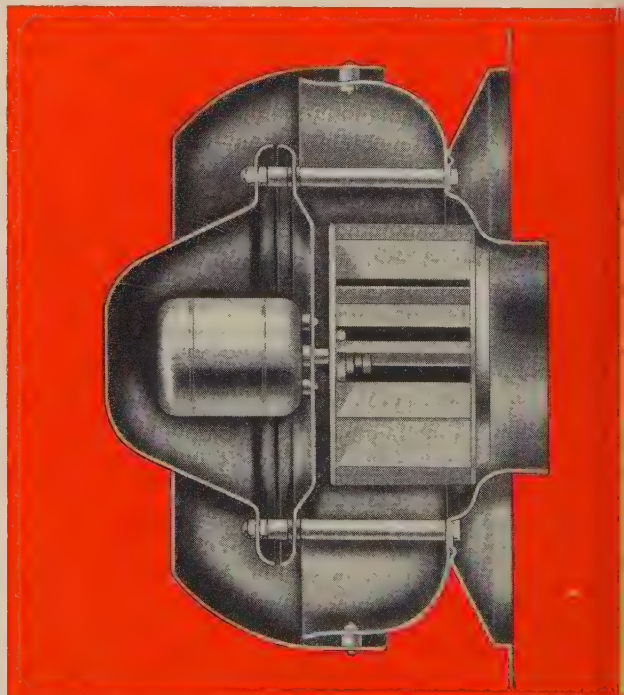
Spinning chuck costs are only a fraction of die costs used in preforming. For the soft metals, hardwood chucks can be used. Most spinners prefer steel chucks for the harder metals. With the pressures that are necessary, it's difficult to hold tolerances on wood chucks. Roland Teiner Co., Everett, Mass., is spinning small diameter aircraft parts to plus or minus 0.005 in. and large diameter parts to plus or minus 0.010 in.

Leadtime is shorter on spun parts because tooling can be made in days or hours. Often, product design can be improved because spun parts are usually seamless and cold working improves the strength of the metal. Stiffening flanges, beads, or internal grooves can be added.

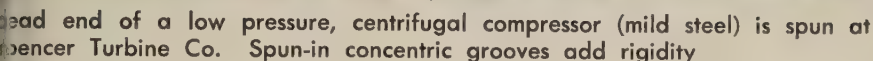
Example—Spencer Turbine Co., Hartford, Conn., spins the heads for its line of low pressure centrifugal compressors. The concentric grooves that are spun into the mild steel dished heads for greater rigidity have become a trademark for the company.



This rocket part (1020 steel) is spun at Commercial Shearing & Stamping Co. from a stamped preform



Wall ventilator built by Loren Cook Co. is made up of aluminum spinnings



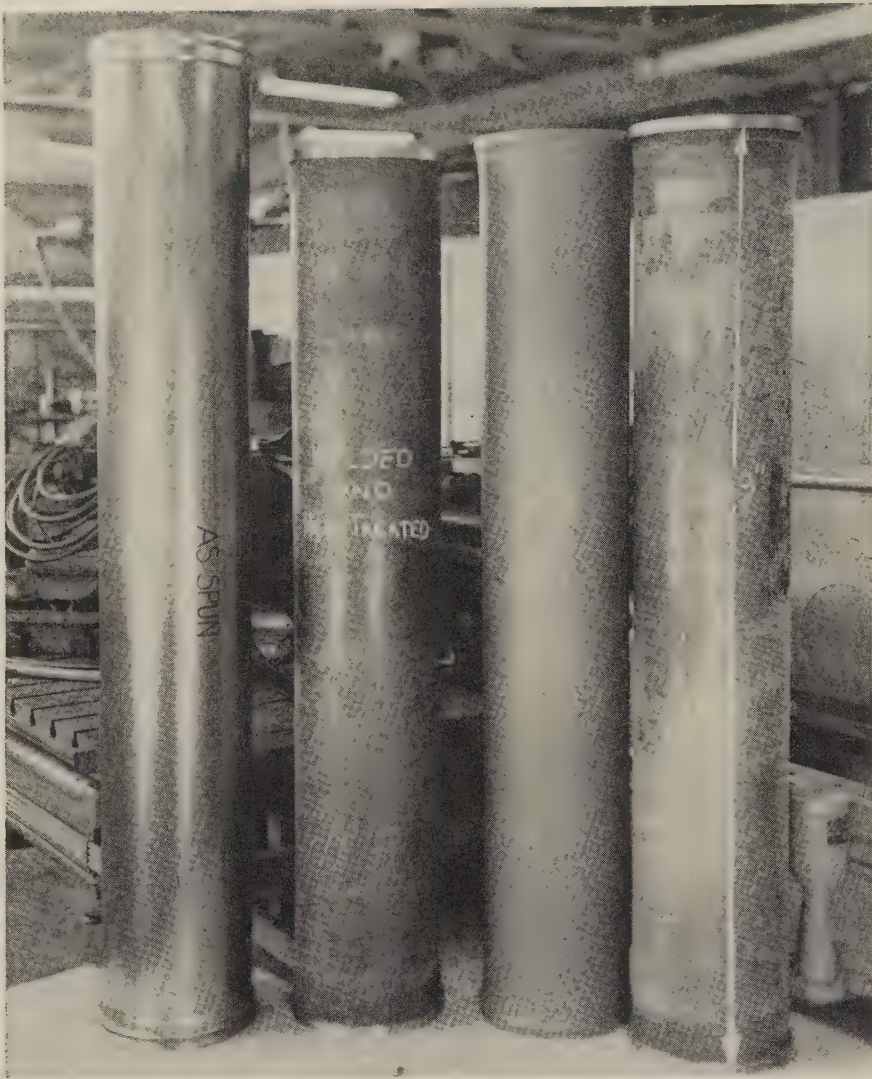
At 1000 pieces, the deep drawn shell drops to \$3.21 unit cost. The spun shell at that quantity would have a \$5.15 unit cost. The break-even point is about 600 pieces.

Spinning is nearly always more economical on cone shapes. A deep drawn stainless steel cone would have a unit cost of \$1522.50 for the first five pieces. A spun stainless cone would cost \$78.17 per unit for the first five pieces. At 5000 pieces, the unit cost of the

Most spinnings fall between 8 in. and 36 in. in diameter, but that's not the limit. For example, Poland Teiner Co. has spun shells smaller than a thimble and parabolic reflectors and wind tunnel bell mouths 16 ft in diameter. The photo on the cover is a dome for roof ventilator being spun at Phoenix Products Co., Milwaukee. The 140 in. diameter blank (3003 aluminum) is spun into a part 120 in. in diameter and about 36 in. deep.

Some cost comparisons worked out by Phoenix Products Co. shows this clearly. The first five pieces of a deep drawn mild steel shell 2 in. in diameter would cost

September 2, 1957



These tubes were spun on a Hydros핀 machine at Ingersoll Kalamazoo Div. of Borg-Warner Corp. They started as 4130 steel blanks, 16¼-in. in diameter, 18 in. long, with 0.650-in. walls. The as-spun tube is 108 in. long and has a 0.100 in. wall. The other tubes have been heat treated and rings have been welded on the ends

drawn cone drops to \$3.16, but the spun cone is still lower at \$2.10.

Higher Strength—Another big factor in favor of spinning, particularly power spinning, is the improved physicals of the finished piece. Typical is a cone with a 34 degree included angle spun from cold rolled and annealed 302 stainless. The annealed material has a tensile strength of 85,000 to 90,000 psi, 50 per cent elongation, and 80 to 90 Rockwell B hardness. The finished cone has a tensile of 175,000 to 185,000 psi, 5 to 6 per cent elongation, and 30 to 35 Rockwell C hardness.

In power spinning, the metal being formed undergoes shear deformation, and grain structure is greatly elongated. The spun part

also has high fatigue resistance; the surface of the part has no minute ruptures or tears in it.

Starting Blank—Often, it is best to combine the advantages of other forming methods with spinning to produce the final shape. C. L. Sporck, vice president, Lodge & Shipley Co., cites five methods of producing the starting blank for power spinning:

1. The simplest blank to obtain is the flat circle or square that can be produced from sheet or strip by shearing or blanking. It will produce a basic cone.

2. Blanks can be preformed in a press.

3. Sometimes, the starting blank can be obtained from a short machined forging. By combining this

with a spinning operation, parts are produced that had been machined entirely from a forging. This is especially true in the engine industry where many of the bearing supports and housings are spun from machined forgings.

4. Starting blanks also can be centrifugal castings. When using a centrifugal cast preform, the part should stay away from materials that will give a dense structure like stainless steel.

5. One of the most important methods is wrapping and welding sheet or extruded sections. The weld must be finish machined if it is the same thickness as the parent metal. After the part has been machined, it is annealed before spinning.

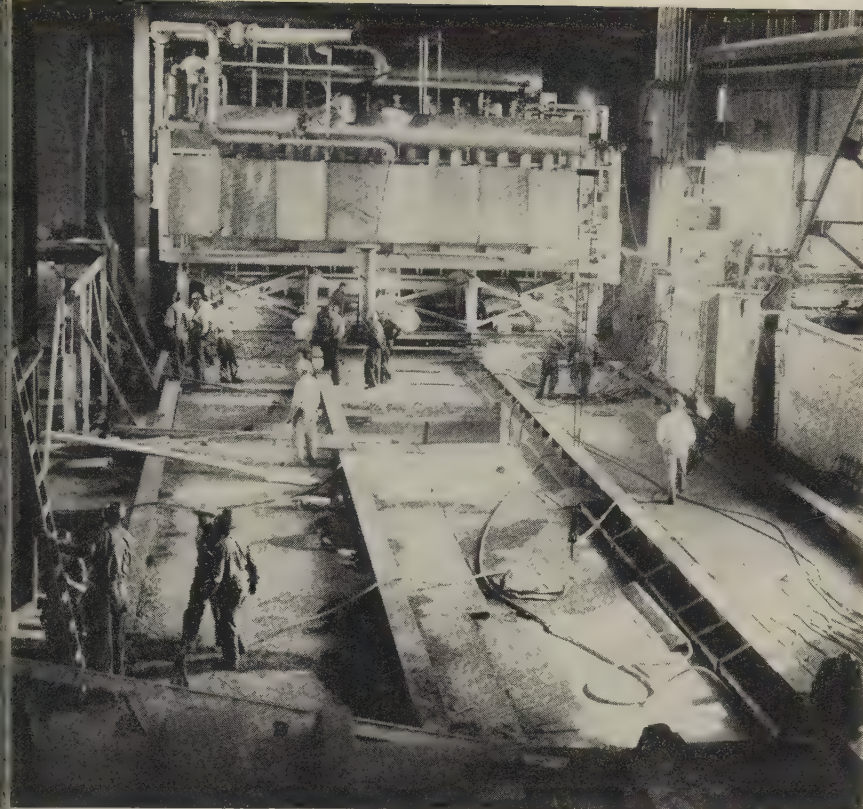
Example—Ingersoll Kalamazoo Div. of Borg-Warner Corp., Kalamazoo, Mich., is spinning long, thin-walled cylinders of 4130 steel on a Hydros핀 machine. Starting as cylinders 16¼ in. in diameter and 18 in. long, with a 0.650 in. wall thickness, the tubes are spun to 108 in. long with a 0.100 in. wall thickness. The inside diameter stays the same.

Such long, thin-walled precision tubing can be used as hydraulic cylinders, pressure vessels, or missile tubes. The division also has spun tubes from cylindrical blanks fabricated from forgings, rolled and welded plates, and from centrifugal castings.

Assembly Machine—Normal spinning is a production method used to produce parts. But on a new 12-station assembly machine built by Cimco Engineering Co., Ann Arbor, Mich., it is two operations in assembling the upper ball joint assembly of an automobile steering mechanism—closing a ball joint socket.

Future—As a production process, spinning remained essentially the same until the introduction of automatic machines. But now it is being fully exploited. Having discovered the possibilities of the process, manufacturers want bigger and better machines.

Watch for Lodge & Shipley Co. to introduce a new machine that will spin cylinders 75 to 100 in. in diameter, with 0.050 in. walls, and 400 to 500 ft long.



end of the line. The 2000-ton furnace moves onto its permanent base in the mill building, which had to be enlarged to make room for it

Furnace Slides to Work

At Republic Steel's Buffalo plant, a 20 by 85 by 80 ft billet heating furnace has completed a 100 ft journey. It was built offsite and slid in place to save time

DIRECTING a mammoth structure offsite, then sliding it into its permanent location is getting to be a standard method of steel plant construction. It has been done with blast furnaces, open hearths, and rolling mills. Latest to adopt the technique is the Buffalo District steel plant of Republic Steel Corp.

It has just finished moving a 2000-ton billet heating furnace onto permanent foundations from an erection site 100 ft away. The company figures that two months of shutdown time were saved by the method. The job was done with only three weeks shutdown.

More Capacity—The new furnace is part of a program for com-

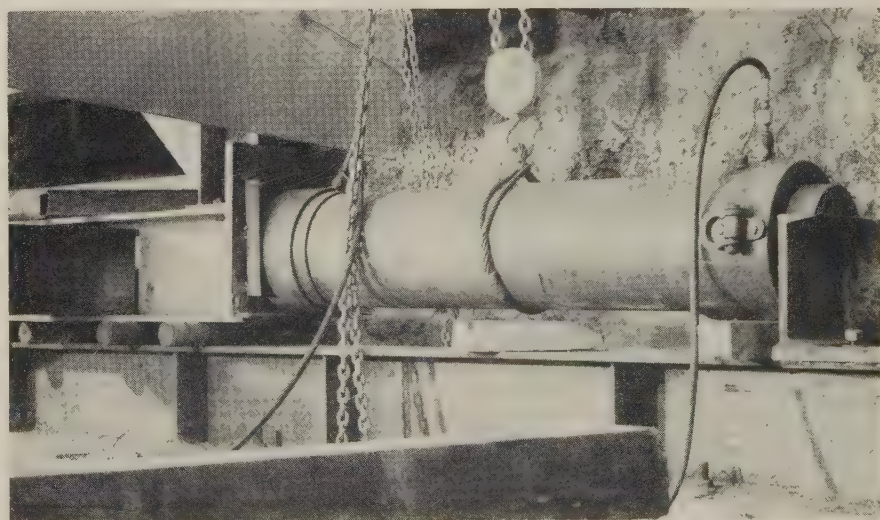
pletely rehabilitating the 14-in. bar mill. It has more than double the heating capacity of the furnace it replaces and sharply increases the capacity of the mill.

It was erected first on hundreds of 2¾-in. steel rollers riding on 12 in., H beam skids which led to the permanent foundation. While the old furnace continued to operate, excavation for new foundations went on around it. When the foundations were ready and the old furnace torn out, two powerful hydraulic jacks inched the new furnace into place. The move took 23 hours.

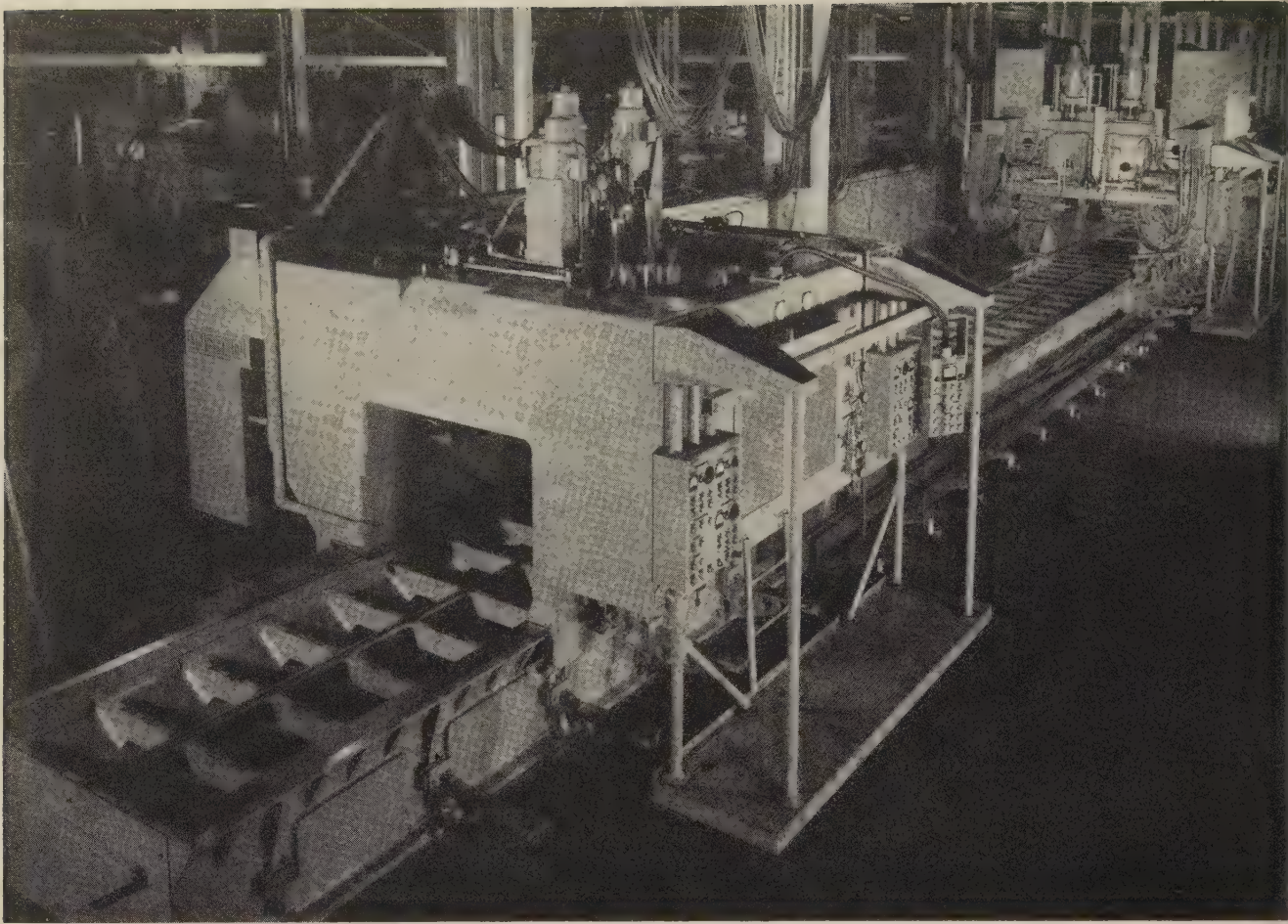
Rejuvenation—As soon as the old furnace was shut down, crews swarmed over other parts of the mill. Among improvements installed were a new shuffle bed (unscrambler), a new charging table, and a new billet turner.

A scraper for dry removal of scale was installed under the table. It reduces the chances of stream pollution by mill scale. Pinch rolls and hot shears were reconditioned. The hot bed was overhauled. Electrical controls were relocated to consolidate operations.

TV Control—A new feature is a closed television circuit which will enable a man at the discharge end of the furnace to charge billets at the entry end, 80 ft away. By watching the screen, he can tell when billets are properly positioned for charging. It is expected to add greatly to the efficiency and safety of the mill.



One of two hydraulic jacks which moved the furnace inch-by-inch into position. Movement was 54 in. per hour



This 96 ft long milling machine has six multiple feed heads for milling wing structural parts for Martin SeaMaster

Machine Does Variety of Jobs

Martin is using it to make parts for aircraft wings. The manufacturer can adapt it to any required width and length. It'll handle straight, tapered or contoured faces

A MILLING machine that handles any type of straight, tapered or contoured face is cutting parts for the wings of the new SeaMaster at Martin Co., Baltimore. It was designed by Onsrud Machine Works Inc., Skokie, Ill.

Large—The machine is 96 ft x 15 ft, 6 in. The bed working width is 60 ft x 36 in., with additional open area between the carriage uprights for work widths to 48 in.

It has 204 control stations, 49 safety switches and 43 electric motors. Coolant is used at the rate of 200 gallons a minute.

Flexible—Six milling heads are built on the two traveling carriages. All milling heads may be operated at one time or in any sequence required.

Fourteen tracer controlled milling feeds are possible in addition to the longitudinal feed of the carriage. Mechanical contact of tracers by followers is converted to electronic signals which control the feed positions of the cutter heads.

Design—The first carriage houses two vertical cutter motors. Each liquid cooled unit is a two-speed induction motor (3600 and 7200

rpm). Each has three electronic tracer controlled feeds which may be used separately or in any combination.

The feeds are transverse, vertical rise and fall and twist in a range of 20 degrees plus or minus from the vertical.

Four cutter motors are on the second carriage. Two are 100 hp with transverse and vertical rise and fall feeds.

A common slide supports the other two 60-hp motors. They are controlled as a pair for vertical rise and fall motion and twist motion of 20 degrees plus or minus from the horizontal. Their transverse feeds are independent of each other.

Longitudinal feed of the carriage is infinitely variable from 0 to 30 in. a minute.



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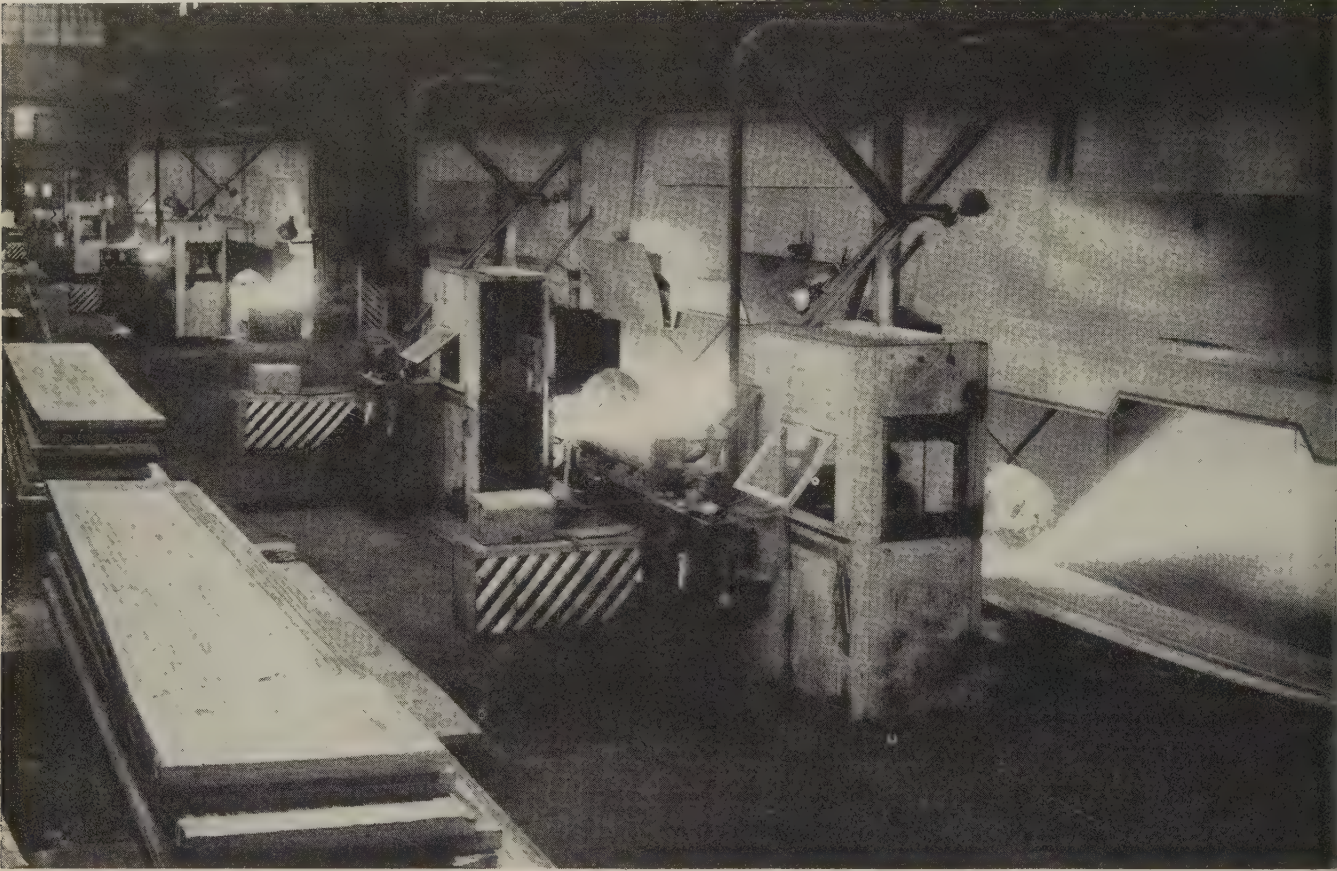
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In steel mill slab conditioning departments . . .

Mechanization Cuts Slab Grinding Cost

By H. R. KERBER
Abrasive Engineer
The Carborundum Co.
Niagara Falls, N. Y.

Faster wheel wear is countered by much greater rate of metal removal. Hot pressed, high density wheels found best for mechanical slab grinders

THE MECHANICAL grinder is changing the complexion of one of the least attractive steel mill jobs. Operators no longer leave the slab grinding department at the first opportunity. Instead, they exercise their seniority to get a grinding machine.

It is necessary to grind (or condition) chrome and chrome-nickel steel slabs to remove the oxidized

surface. This exposes seams and cracks which are then ground out—otherwise the defects would remain during rolling and finishing.

Grind in Comfort—Conditioning used to be done with the manually operated, swing frame grinder. The newer mechanical grinder eliminates hand labor. The operator sits comfortably in a cab. Using four main controls—two

hand levers and two pedals—highly duplicates the action of the manual grinder. Secondary controls regulate the speed of traverse, position the grinding head, and control the wheel head pressure.

Most enthusiastic acceptance of the mechanical grinder has been in industries which grind large slabs. Billet grinding with a mechanical grinder is still more or less experimental.

High Stress—Increased stress of the grinding wheel was one of the main problems created by the mechanical grinder (it can apply upward of 700 lb pressure to the grinding face of the wheel). The

SLAB GRINDING . . .

constant traverse rate and the power of 40 and 60-hp motors, set up high stresses on the wheel.

At Carborundum Co.'s grinding laboratory, extensive tests have been conducted on the effect of pressure applied to the grinding wheel. Test results have led to the following conclusions:

1. There is a maximum pressure that can be applied to a wheel beyond which it will break down at an uneconomical rate.

2. Up to this pressure, an increase in pressure produces faster metal removal.

3. Hot pressed wheels are much more efficient than cold pressed wheels.

Many users of mechanical grinders have conducted their own experiments, and the results are somewhat diverse. One concern concluded that 350 to 400 lb pressure gave most efficient results; another found the best pressure between 475 and 525 lb. (Wheel size in each case was 24 x 3 x 12 in.; abrasive wheel specifications were the same).

Correct pressure undoubtedly will be decided by each user through trial and error. Thus far, the 600 to 650-lb range has been too high for efficient abrasive performance. However, wheels in the development stage may make this pressure range efficient soon.

Traverse—The traverse rate of the machine is left, more or less, to operator decision. When the surface of the slab appears clean and the scale thin, the operator, with a head pressure of 400 to 500 lb, can traverse at about 50 to 60 fpm.

For heavily oxidized slabs, it is best to reduce the rate to at least half—to give the wheel sufficient time to penetrate the scale and remove, in the first pass, many of the minor and shallow defects. This should reduce the number of spots which must be reground and allow the operator to concentrate on the deep seams and cracks.

Faster Grinding — Production rates change materially when the mechanical grinder is adopted, with a large increase in pounds removed per hour. With hand-operated machines, removal rates of 50 lb per hour were considered good.

Mechanical Grinding at Steel Slabs

Speed Changes With Wheel Wear

Changes	Diameter	RPM
24 x 3 x 12-in. Wheel		
Start	24	1512
1	22	1649
2	20	1814
3	18	2016
20 x 2½ x 6-in. Wheel		
Start	20	1814
1	18	2016
2	16	2268
3	14	2592

Mechanical grinders are recording rates of 150 to 180 lb of metal removed per hour using wheels 24 x 3 x 12 in. Wheels 20 x 2½ x 6 in. have achieved removal rates of 60 to 115 lb per hour (in this case the head pressure is generally in the 300 to 400-lb range).

Users can depend on an operator to produce approximately 1 ton per hour. This is quite a change from the ½ ton or less per hour of a few years ago with a manually operated machine.

Shorter Life—Increases such as these are not gained without sacrifice: In this case, the life of the grinding wheel. On hand-operated machines, life of 14 to 18 hours was considered satisfactory for a wheel size 24 x 3 x 12 in. On the mechanical grinder a life of 6½ hours (4½ hours contact time) is considered satisfactory.

This high abrasive consumption does not nullify production gains. Savings of \$7 per net ton ground have been realized by some companies. Much of this comes from increased production rates. In one instance, six mechanical grinders are equaling or exceeding the production of 12 manually operated machines. Another factor that contributes to the efficiency of mechanical grinders: One machine can utilize two and sometimes three benches.

Good Technique—The operator can contribute much toward efficiency. While the mechanical grinder eliminates physical effort,

it does not eliminate the use of good technique.

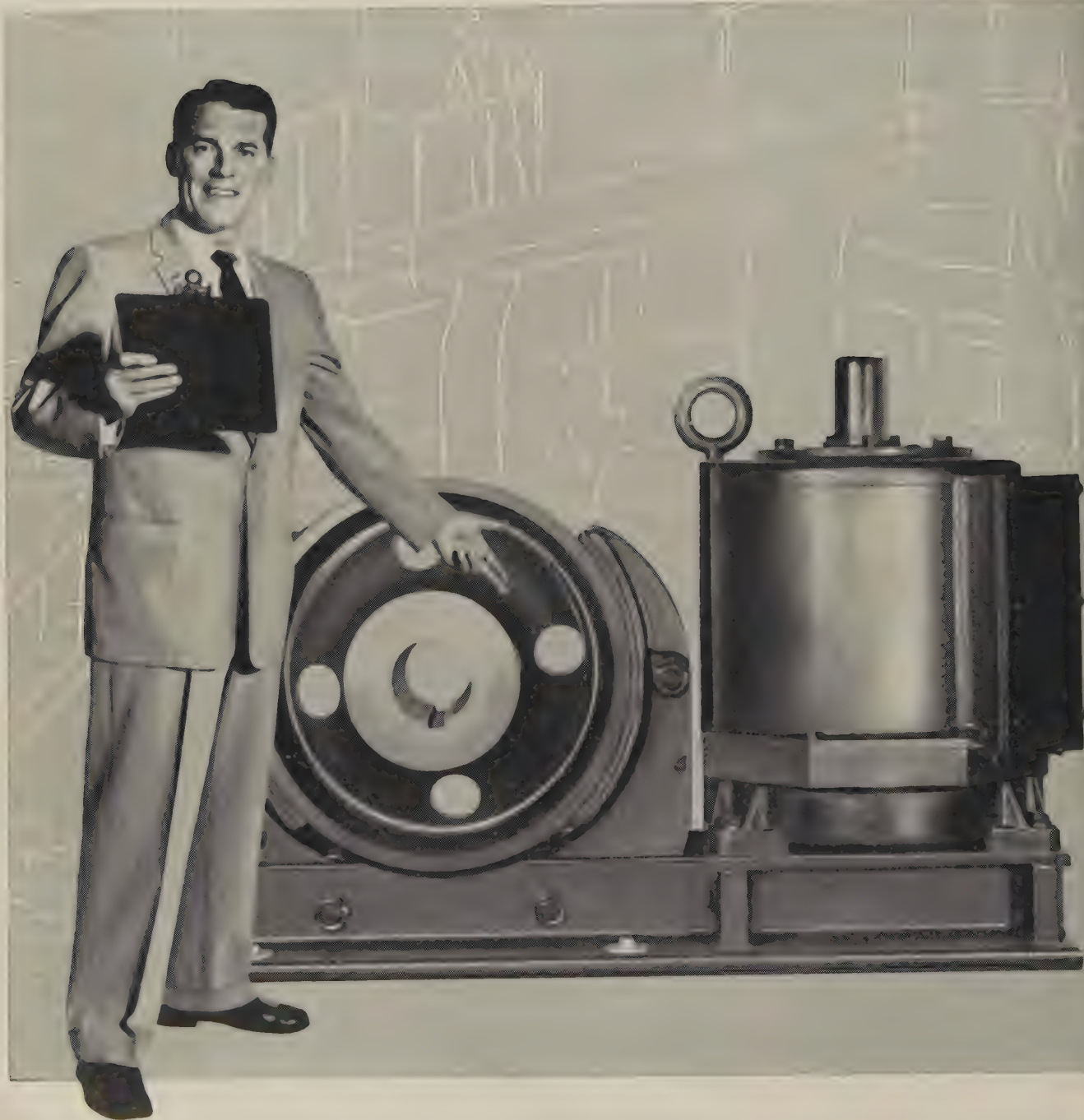
When an operator on a manual grinder generates too flat a wheel face, the wheel begins to bounce or vibrate. He then tilts the machine to grind with a corner of the wheel and smooth cutting action begins anew. With a mechanical grinder, the operator can see this vibration but cannot feel it. If he is slow in changing the wheel position, the result may be severe spalling and damage to the wheel.

Watch Edges—Another point of caution: When approaching the end of the slab, the operator must be careful not to let the wheel run off. When this happens the natural reaction is to quickly reverse direction, causing the wheel to hit the end of the piece. It is possible to stun or damage a wheel in this manner.

When grinding the front or rear edges of the surface, the wheel should be no closer to the corner than ½ in. The edge of the slab acts like a dressing tool, wasting many inches of usable abrasive. When it is necessary to grind the corner, the wheel should be vertical rather than tilted, and the head pressure reduced if the pressure control is in the cab.

Speed Control—Correct operating speed is important for the wheel to perform at maximum efficiency. The operator can control this from his cab. Rings may be stencilled on the side of the

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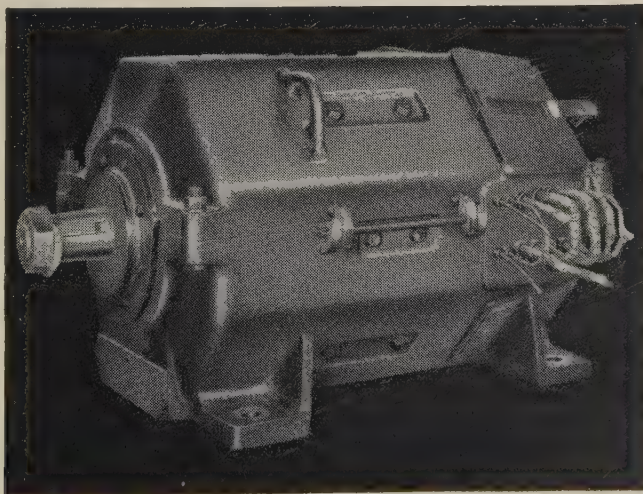
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SLAB GRINDING . . .

wheel to indicate when speed should be increased. Recommended speeds and speed changes are shown in the chart.

Personnel assigned to mount wheels should be careful to place the new wheel on the wheel mount so the rings are topside or away from the V-belt pulley. Placed this way, the operator can see the rings and be reminded when a speed change is due.

Wheel Changing—When removing the used wheel from the hub, the stub should be examined to see if there has been excessive slippage, usually indicated by a worn or shiny section in the arbor hole. If slipping flanges are tightened excessively, they may spring and not grip the wheel properly. The wheel bearing surfaces of the spindle should be cleaned, and any old blotting paper scraped from the flanges. Flanges also should be checked for burrs and distortion.

If possible, extra wheel heads should be provided for machines using demountable heads. Floor space should be set aside where millwrights can remove the used wheel and install a new one. This will minimize delay.

As a wheel approaches stub size, a new wheel and mount can be placed in a holder between the benches. The used wheel and mount can be removed and the machine moved to the new wheel, mounted, and operation resumed. A crane can pick up the used wheel and deliver it to the changing area where it will be made ready for the next machine to require a change.

The mechanical grinder is a capital expenditure. Constant preventive maintenance should be practiced to keep it operative with special attention to hydraulic lines, pumps, bearing seals, transmission, and traversing and oscillating mechanisms. Since wheels and machine operate under severe conditions, the best wheel will not deliver optimum performance unless the machine is in good condition.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.



How strong brick improves furnace performance

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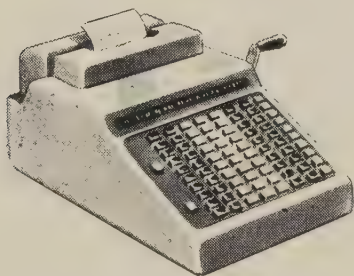
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A new folder gives you details on the complete line of Armstrong Insulating Fire Brick and Refractory Cements. Write Armstrong Cork Company, 2709 Reed Ave., Lancaster, Pa.

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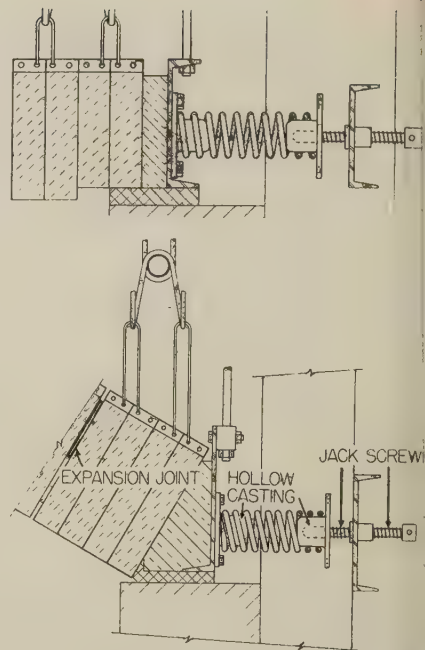
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Spring and expansion joint construction compensates for uneven expansion of refractories

THE SPRING LOADED floating skewback has become a standard method of construction for open hearth and other reverberatory furnace roofs. It compensates for expansion and contraction in the roof.

However, the heated lower portion of the roof refractories expands more rapidly than the upper portion, putting a twist in the skew. The Geo. P. Reintjes Co., Kansas City, Mo., has devised a simple and economical method of compensating for the twist.

Expansion Joints—The Reintjes design divides the entire roof into squares about 18 x 18 in., with fixed expansion joints separating each square. Seal plates prevent excessive air infiltration through the expansion joints.

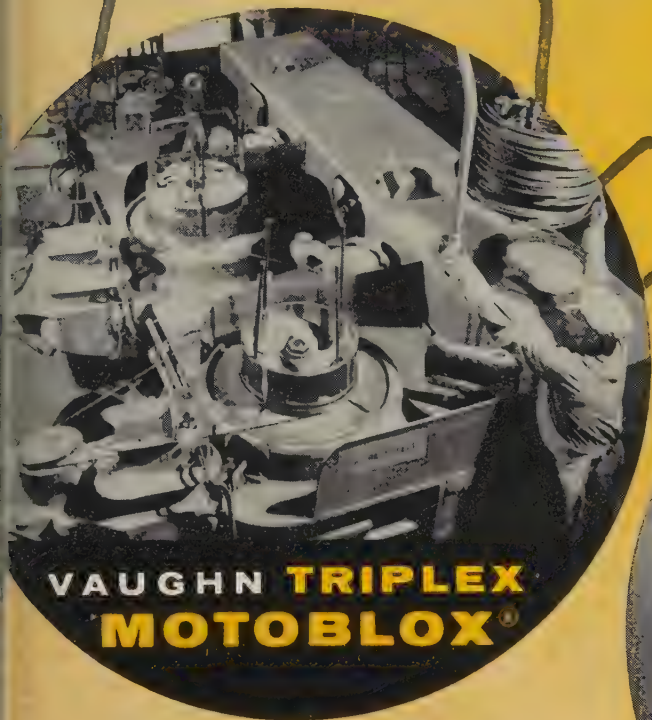
To compensate for additional expansion, a casting with a hollow boss is bolted to the skewback. A heavy spring is seated over the boss, and an identical casting is slipped into the other end of the spring. A standard jack screw, threaded through the skewback channel and seated in the casting at the free end of the spring, puts tension on the skewback.

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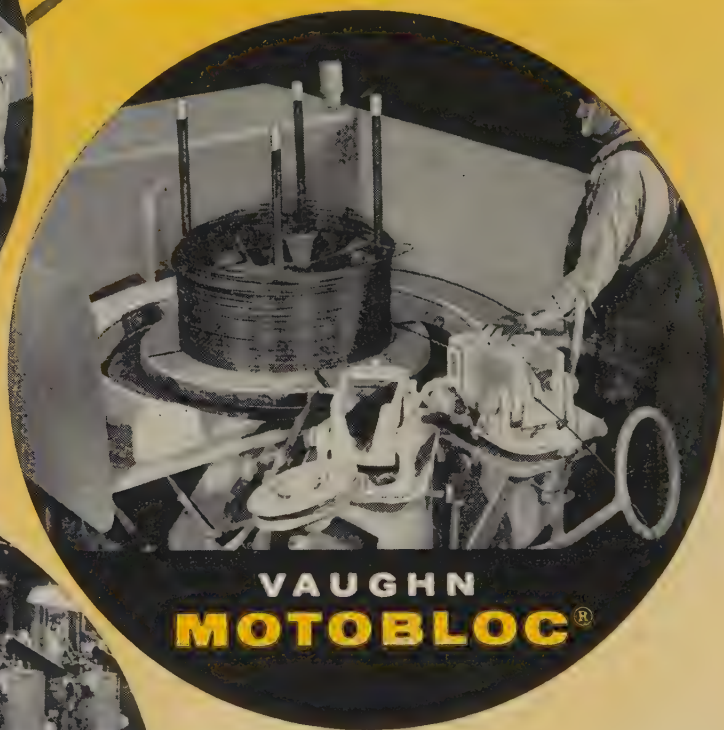
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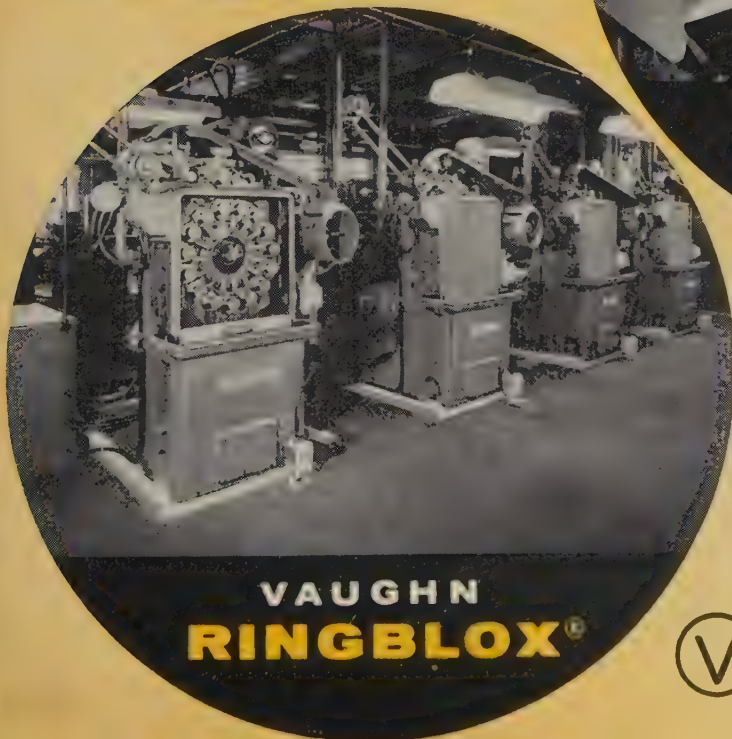
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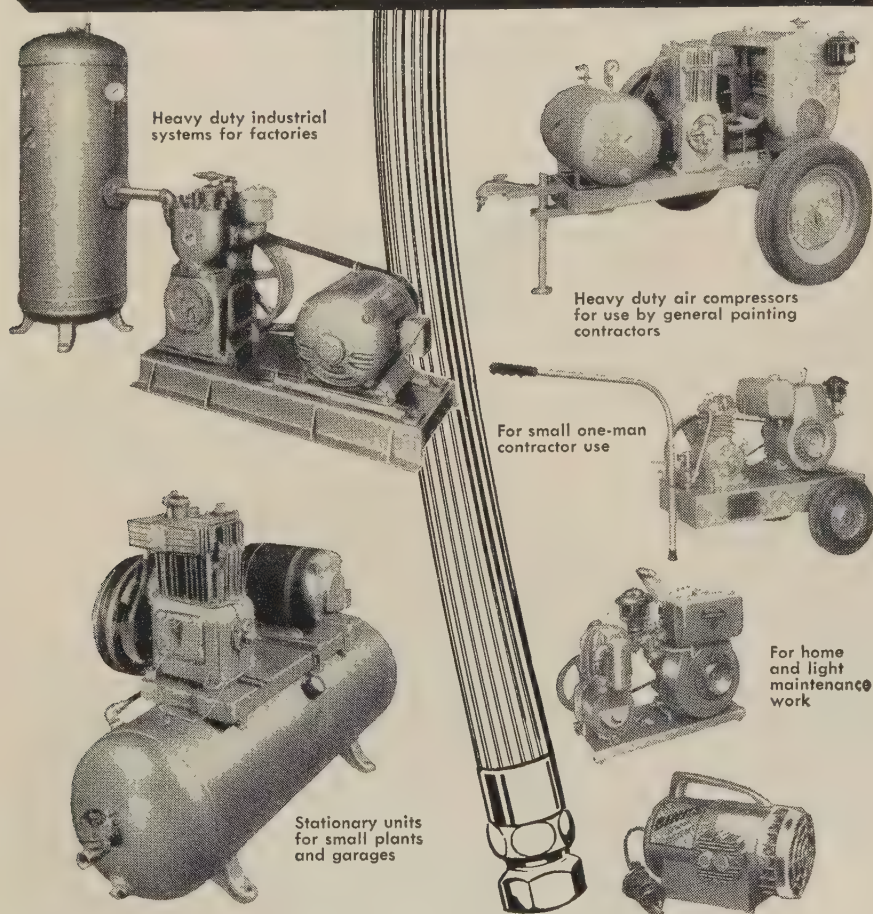
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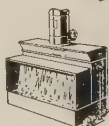
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Ore Car Handling Eased

Radar used in semiautomatic retarding system, unusual feature of new sintering plant

GRAVITY and radar will combine forces to spot hopper cars at U.S. Steel Corp.'s new sintering plant near Butler, Pa. It's the first semiautomatic car handling and retarding system for a sintering plant, says the maker of the equipment, Union Switch & Signal Division, Westinghouse Air Brake Co., Pittsburgh.

To help fill growing demand for sintered ore from the corporation's Pittsburgh area operations, between 35 and 40 cars an hour will unload their cargoes at the plant. Much of it is foreign ore, unloaded at docks in the East and brought to Butler by rail.

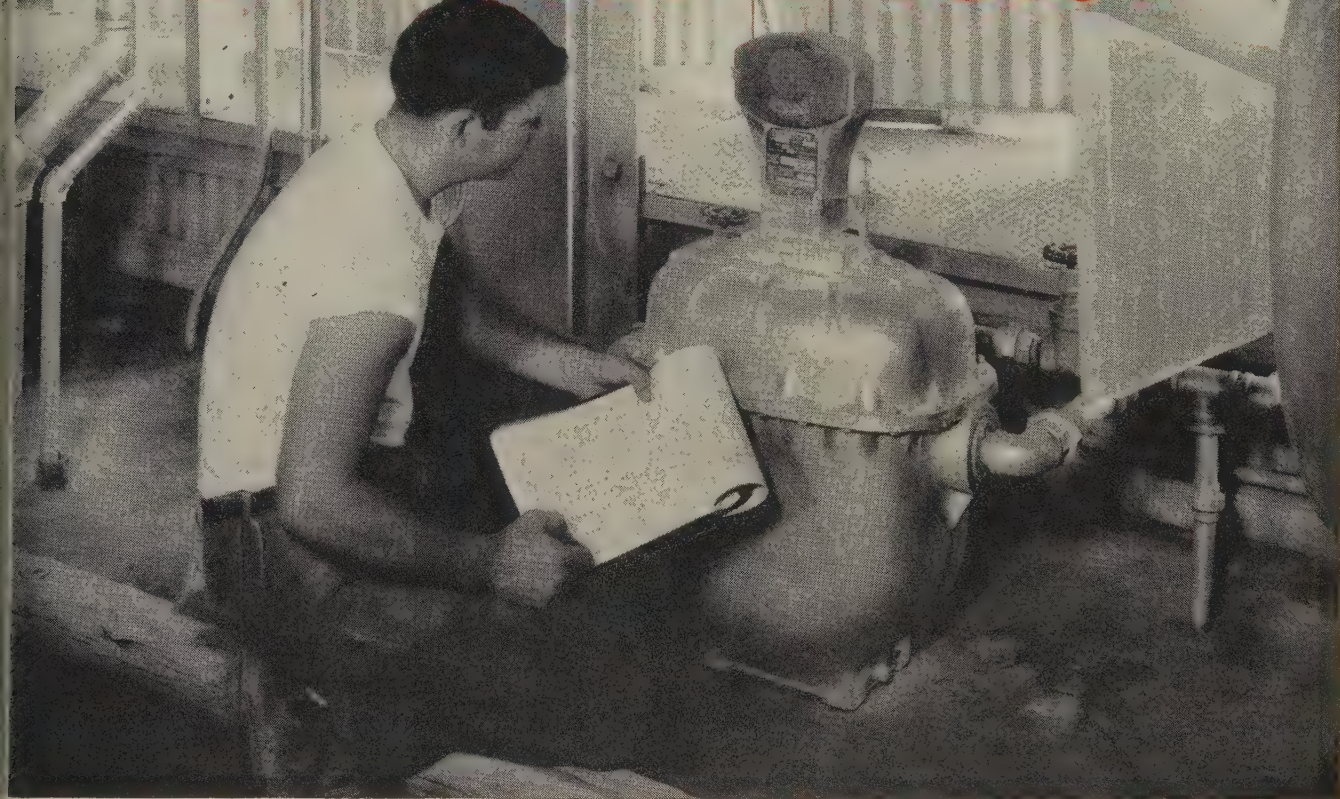
Automatic Operation — A yard engine will push cars to a dumper for unloading. After unloading they will roll individually, by gravity, down a grade toward a car retarder and empty car yard beyond. Automatic control equipment, using radar to measure car speed, will operate the retarders to obtain a preselected leaving speed from the retarder. The car will then roll, still by gravity, through remotely controlled switches onto its proper track. The empty car yard will hold 219 cars on four tracks each 1800 ft long.

A single operator in a control tower near the retarder will select the desired speed by pushing one of four pushbuttons from a desk-type control unit. He can also control position of switches. Car leaving speeds will vary from 3 to 13 mph.

Air operation of the car retarders combines instant operation with firm braking force. Any number can be installed on either rail to obtain required amount of braking effort. The equipment eliminates a dangerous job—car riders who mount cars to manually control their speed.

Sintering plants have been enjoying unprecedented growth since 1950, with annual sintering capacity now close to 60 million tons. There will soon be few blast furnaces without an adjacent sintering plant. More sintering plants are also being built at the mines

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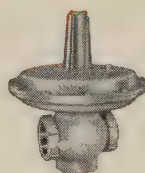


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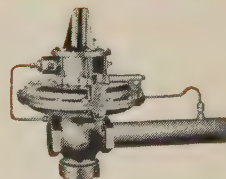
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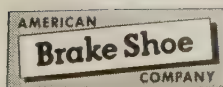
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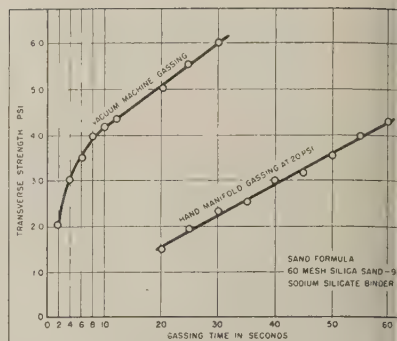
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Transverse tests were made on 1 x 1/8 in. specimens at 6 in. centers. Vacuum gassing times are those of the dwell period

Faster CO₂ Cores

A multicycle vacuum gasser uses less CO₂ and hardens cores faster than gassing by hand

By D. C. EKEY and E. G. VOGEL
Technical Director Research Engineer
Lebanon Steel Foundry
Lebanon, Pa.

USING a vacuum CO₂ gassing machine developed by Alphaco Inc., York, Pa., has these advantages:

- Cores have improved quality.
- Susceptibility of treated cores to moisture deterioration is greatly reduced.
- Fixtures and vents are eliminated.
- Less CO₂ is used.
- Production is increased.

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Results — CO₂ consumption is less than a third of the amount formerly used.

Cores are cured uniformly; edges and corners in deep, blind recesses are hard, and scrap caused by drawing soft cores from the box is eliminated.

All rigging has been eliminated; there are no problem jobs.

Stub gassing is no longer needed.



Cleveland Nylok self-locking hexagon head cap screws hold tight, speed production, simplify design

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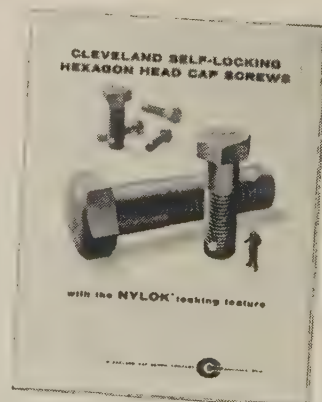
A Cleveland Nylok* hexagon head cap screw is self-locking — won't work loose. The locking device is a tough, resilient pellet of nylon that forces the mating threads together in a secure metal-to-metal union. All auxiliary locking devices are eliminated. Seated or unseated, the screw locks wherever wrenching stops. And because of "plastic memory," the pellet tends to recover its original shape and the screw can be used repeatedly.

These self-locking cap screws give uniform torque and will not gall or damage

threads or seating surfaces. They are not affected by aging or by temperatures from -70° to $+250^{\circ}\text{F}$. Further, when screws are properly seated, the locking pellet functions as a liquid seal.

You will save on production time when you use Cleveland Nylok self-locking screws. In addition, you can simplify design and reduce size, weight and inventory. Contact your Cleveland distributor for these self-locking screws in all standard sizes from 1/4 to 1 in., in high carbon quenched and tempered steel (C-1038).

*T.M. Reg. U.S. Pat. Off., The Nylok Corporation



Write today for your copy of the Cleveland Nylok folder giving complete technical data and specifications on self-locking hexagon head cap screws. We can also supply other standard and special screws with the Nylok self-locking feature.



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Here, at Handy & Harman, we have actual case histories in which impressive amounts of money in waste form were lost for years. That's why we've included this check list of various kinds of valuable waste. If your plant disposes of any of these materials (or similar ones), it will pay you to investigate Handy & Harman's refining service. Send a trial lot to the Handy & Harman refinery nearest you for accurate evaluation. We offer unsurpassed facilities and experience for complete recovery. If you're not sure of the value of waste you are throwing away, let us check a sample for you. You may discover an entirely new source of income. Write or call our Refining Division today.

CHECK LIST FOR REFININGS

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Filter Pads
Silver Anode Ends
Silver Tank Scrapings

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Silver on Steel Bearings
Silver Steel Turnings
Silver Blanking Scrap, Stamping Strip, Wire
Silver Grindings
Silver Copper Scrap
Silver Powder Mixtures
Silver Screen Scrap
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FASTER CO₂ CORES . . .

and the detrimental effects of excess CO₂ concentrations in the work area have been eliminated.

Cores can be vacuum gassed in the box, on driers, or after they are stripped. It is easy to gas sand mixtures of low permeability.

A chamber full of cores can be cured in the same cycle time as one core.

The Machine—A double cycle features the operation of the gas-er. The chamber is evacuated, pressurized with CO₂, re-evacuated, and again pressurized with CO₂.

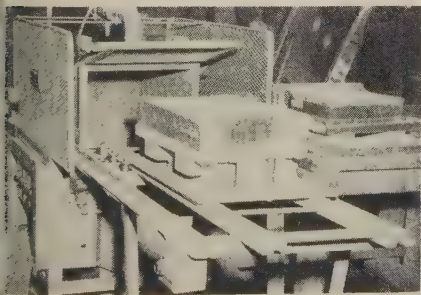
When the vacuum is equal to 28 in. of mercury, the gas mixture of the first cycle consists of 93.3 per cent CO₂ and 6.7 per cent air. In the second cycle CO₂ is 99.5 per cent, air is 0.5 per cent.

The high CO₂ concentration and the mixing action resulting from the double cycle combine to produce fully cured cores and molds.

(Previously, experiments were made with a chamber which pulled a single vacuum. Cores treated by this machine were only surface cured, and deep curing in the box took too much time.)

Typical Cycle—It takes 12 to 18 seconds to pull the first vacuum. CO₂ enters the chamber until atmospheric pressure is reached, then held. Time: 2 to 5 seconds. A second vacuum is pulled. This takes 12 to 18 seconds. CO₂ is again introduced and held; total time is 8 to 12 seconds. This last period, the dwell time, has the greatest influence on the degree of curing obtained.

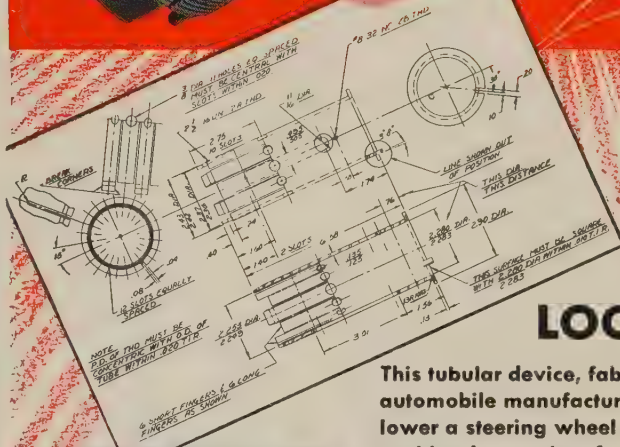
The graph, shows how longer dwell times increase transverse strength. Strengths and times for



This vacuum unit has a capacity of 2 cu ft. Other machines have chambers 12 in. high and 16 x 24 or 24 x 24 in.

Michigan Electric Resistance WELDED STEEL TUBING

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Automotive Steering Wheel HEIGHT LOCKING DEVICE

This tubular device, fabricated by Michigan for a major automobile manufacturer, enables the driver to raise or lower a steering wheel and lock it into the exact elbow position he requires for greatest driving comfort.

A hand nut on the locking sleeve is turned counter-clockwise one-half and locked at the desired height by a one-half clockwise turn.

The utmost dimensional accuracy is required for this intricate part, which requires a multiplicity of exacting operations for smooth, reliable functioning. It is still another example of the ability of Michigan engineers and production workers to meet the needs of product manufacturers for difficult tubing fabrications produced in volume at low cost.

You are invited to check the dimensions in the drawing at the left. It illustrates the type of problems that our engineering staff is always prepared to solve for Michigan customers.

We will welcome the opportunity to place at your disposal the many years of design and production skills that make Michigan tubular products so superior, so dependable, so economical.

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 $\frac{1}{4}$ " to 4" O.D., 7 to 22 gauge
SQUARE Gauge **RECTANGULAR**
 $\frac{1}{4}$ " to $\frac{3}{4}$ " 16 thru 22 $\frac{1}{4}$ " minimum
 $\frac{1}{2}$ " to 1" 11 thru 22 side to 5"
1" to 2" 11 thru 20 maximum side
2" to 3" 11 thru 18
Carbon 1010 to 1025

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than Morse, because . . .
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Look for your local Morse distributor in the Yellow Pages under "Power Transmission," or write: **MORSE CHAIN COMPANY, DEPT. 2-97, ITHACA, NEW YORK**; Export Sales: Borg-Warner International, Chicago 3, Illinois.





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FASTER CO₂ CORES . . .

hand gassing (of the same sand mixture) are also plotted on the chart.

Usually, a transverse strength of 4 to 5 lb is adequate for good handling. Higher strengths are justified only when the core or mold is to be used shortly after gassing and doesn't have time to air harden.

Machine gassing enables the operator using a limited number of dryers to increase production. All the dryers are filled and are then gassed simultaneously. The dryers are then returned to the coreblower.

Gas Consumption—The chamber of the vacuum machine is 15 x 24 x 10 in. high. When the machine is not loaded to capacity, wooden blank-off blocks are used to occupy the excess space. The blocks require only a few seconds to position and are changed only at the end of the run.

This arrangement holds waste gas to about 0.1 lb (cost: 0.5 cent) per machine cycle.

Cost of CO₂ with the vacuum process is estimated to be less than \$1 per ton of cured cores.

Cores so made for immediate use have a higher initial hardness than those produced by other methods. This method is economical because the gas is not being dissipated during the longer curing interval.

Experimentation — Before the vacuum unit was put into production, a major test program was undertaken in the sand laboratory.

Results indicated that cores gassed in the box are about equal in strength to those stripped before gassing. The slightly reduced strength of the stripped cores may have been caused by the rapping required to remove them from the box in the noncured state.

The effect of preheated CO₂ was investigated. The gas was heated to 20 temperatures between room temperature and 1000°F. There was no correlation between gas temperature and transverse strength.

Shelf storage increased the strength of vacuum treated cores above that of hand gassed cores for one sand mixture tested. Strength of the vacuum core after 24 hours was about 23 psi, that of a core gassed by hand (for 20 seconds) was about 17 psi.

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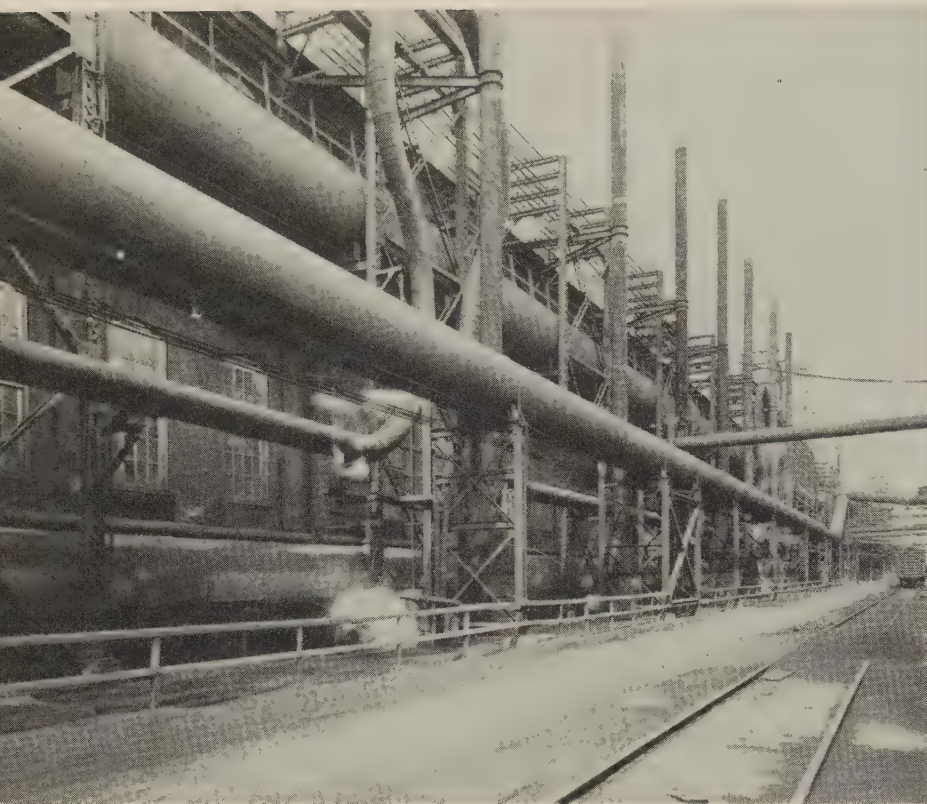
This man and Signode's Model MH10 power strapping machine are applying four steel straps to a coil of strip steel. The operator has fast push-button control of strap placement and the strapping action. To position the coil, the machine turns it in the direction that tightens the outer laps. Air-operated plates squeeze the sides of the coil to square it up. Surface finish of the steel is protected. Edges aren't damaged in handling or transit. There's no waste. The coil is worth more, whether it's yours as manufacturer or destined to be yours as receiver. Protection of product integrity to destination is one way Signode makes things cost less to handle, store, ship and receive. For more ways, call the Signode man near you, or write:



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COAL TAR COATING—The cold blast main at a steel company, coated with Koppers Co.'s Bituplastic No. 28 material, is still in excellent shape after six years



ALUMINIZED STEEL—The car muffler at left is carbon steel; it failed in 18 months. Muffler on right is Armco

New Ways To Fight Corrosion

Last week's article discussed developments in cathodic protection, inhibitors, and corrosion resistant materials. This part covers organic and metallic coatings

PART TWO

COATING systems, lacquers, and paints limit the corrosion of metal by isolating it from its environment. They are effective on iron to the extent that they limit diffusion of moisture and oxygen.

In applications where metals are exposed to chemical attack, the inert resin coatings are gaining favor. Most are two-coat systems (primer and finish coats) of the baking or air dry type.

Epoxy Coatings — The epoxy-

based coatings are flexible and offer excellent resistance to impact and abrasion. They can be formulated to resist most liquid and gaseous industrial chemicals and are used for drum linings, maintenance finishes, gas and oil pipe lines, and electrical insulation.

Most epoxy formulations include catalyst type curing. There are two kinds: Those with extended pot life that are mixed with the catalyst before spraying; and those that set up almost instantaneously and are put on with a

catalyst gun. The epoxy films are relatively thin; it normally takes about six coats to get a 6-mil film thickness.

Vinyl Resins—At normal temperatures, these coatings resist alkalis, mineral acids, alcohols, greases, oils, and aliphatic hydrocarbons. Air drying and baking types can be formulated for good resistance to moisture, high film strength, and good elasticity.

High-build vinyl coatings have been introduced recently. One company claims its coating requires only two coats to exceed the customary minimum safe film thickness of 5 mils when applied at 250 sq ft per gallon over a suitable primer.

Polyurethane Foam—These materials offer good adhesive properties and excellent wear, humidity



Aluminized Steel, Type 1 (resistant to atmosphere and temperature). It has been in service 55 months

ty and weather resistance. Their insulating properties make them valuable coatings for refinery tanks, pipes, and valves. They can be used clear or pigmented, as a baking or air drying type.

They must be mixed with a catalyst before use. A great deal of success has been had in spraying them with a standard catalyst gun.

Polyurethane Coatings — Their physical properties are a big feature. They are highly flexible and resist impact, abrasion, and chipping.

They are recommended for corrosive acid and alkali service, with a top temperature range of 225 to 250° F.

Synthetic Rubber—Hypalon, a polyethylene polymer, can be formulated with a variety of physical properties. It has excellent resistance to sunlight, weather, heat, ozone, a wide range of industrial chemicals, and flexing—even at low temperatures.

Temperature range is -40 to 350° F. The material often is blended with polyethylene and

epoxy resins for greater abrasion resistance.

Paint Primers—Several use a fish-oil vehicle to penetrate rusted surfaces down to bare metal. These materials can be applied directly over rusted surfaces; it is necessary only to remove the loose rust particles. Zinc chromate pigments are used in the primers to inhibit further rusting.

Wash Primers—This protective coating is especially valuable when the quality of top coats is important. Two types: The two package primer and the single package material.

The original wash primer, developed in co-operation with the Bureau of Ships, U. S. Navy, is a two-package system—one containing resin, pigments, and solvents; the other an acid catalyst (phosphoric acid) and additional solvent. In this formulation, the adhesive properties of the mixed primer remaining in the container diminish rapidly after about 8 hours. Its advantages are that it can be applied to yield a 0.1 to 0.3 mil dry film over a great variety of metal surfaces and is effective even under exceptionally humid or wet conditions.

New — Single package wash primers, in which both the base and catalyst (resins, pigments, and sol-

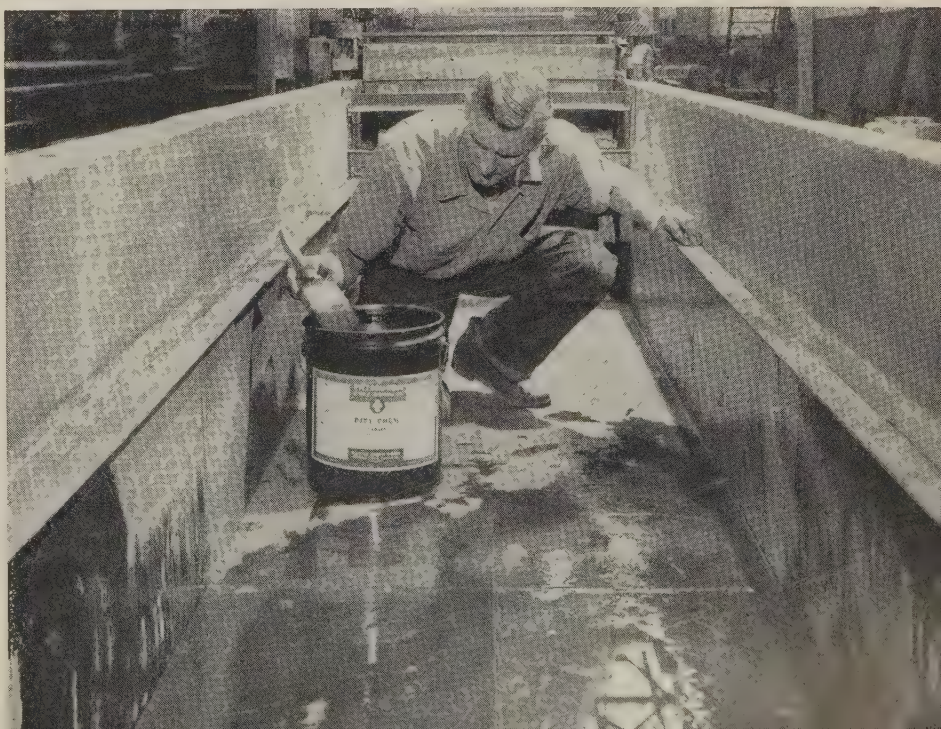
vent) and the catalyst are mixed during manufacture, provide good adhesion and are stable for six months or more. They have most of the desirable features of the two-package system without the limited pot life.

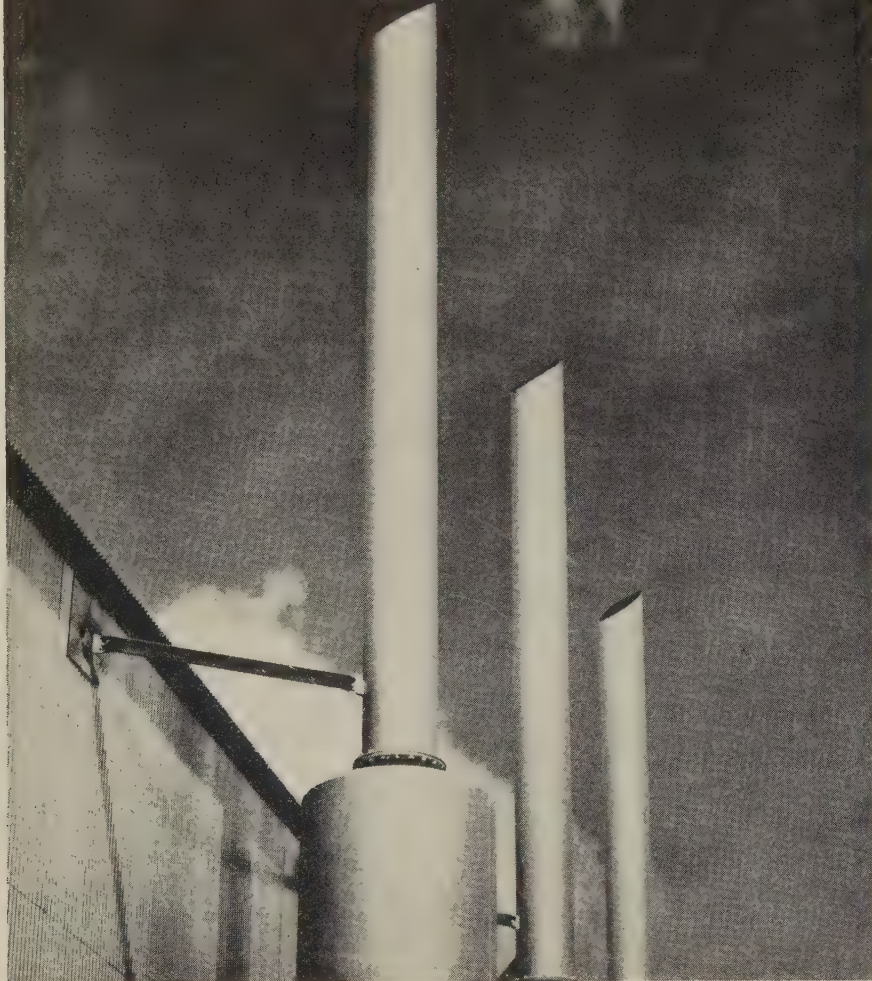
The action of wash primers over steel is threefold: 1. An iron oxide and zinc phosphate film, similar to that formed in the phosphating process, is deposited on the metal. 2. The material provides a continuous supply of chromate ions to repair pin holes in the phosphate film. 3. The need for a special chromate rinse is eliminated. The cured polyvinyl butyral or formal film is chemically bound to the inorganic layers through a chromium complex, providing additional mechanical protection to the metal.

Where They're Used — Refrigerator, washing machine, and other household appliance bodies have been coated with wash primers. Other examples: Auto and truck bodies, oil well equipment, bridges, dam gates, railroad, electrical and communications equipment have given excellent service.

The Navy is a large user of the materials. They are effective on ferrous and nonferrous metals such as steel, aluminum, galvanized iron, magnesium, zinc, nickel, tin,

COAL TAR-EPOXY—A pickling bath tank is coated with Pitt Chem Tarset, a coal tar-epoxy resin catalytic setting coating





SILICONE PAINT—The aluminum pigmented silicone paint on diesel exhaust stacks at the San Patricio reduction plant of Reynolds Metals Co. near Corpus Christi, Tex., is still in excellent condition after 2½-year's service at 950 to 1100° F

cadmium, and copper.

Coal Tar Coatings—These are probably the oldest materials used. Two types: The hot and cold applied. Generally, hot coatings are used to protect underground structures; cold coatings are used on above ground surfaces.

These coatings are primarily moisture barriers. They resist most dilute organic acids and alkalis that are found in soil. They give excellent protection against normal corrosive conditions underground, under water, or in industrial atmospheres.

Epoxy Blend—The newest material is a combined, coal tar pitch, epoxy resin, catalytic setting coating. It is recommended for severe corrosive conditions. Though extremely hard, it is flexible and adheres tightly to metal. It is not easily damaged by bending, handling, or pile driving. You can chip it by hitting it, but you can't break its bond.

The coating is being used in crude oil storage tanks, in refineries where it comes into contact with aviation gas, in mine water piping, in chemical plants, in steel mills, and in marine applications such as barges and piling.

The long life of coal tar coatings (some have been in service since 1914 without damage) is partially due to their thickness. Even a cold application will be 12 to 15 mils thick per coat (two coats usually are put on). Thickness can be particularly important when you have soil movement and changes in temperature above the coated structure.

Silicone Coatings—The big feature of these finishes is their resistance to heat. Silicone-aluminum coatings on jet engine parts have withstood 800° F. The silicones are water repellant and chemically inert, which make them good corrosion resistant finishes.

METALLIC COATINGS

Probably the leading commercial coating of this type is zinc. Over 3 million tons of galvanized sheets and strip were shipped in 1956. Zinc is applied by hot dipping, electroplating, or spraying. The greatest use of zinc coated iron or steel is for applications exposed to the atmosphere.

Zinc-Rich Paints — These coatings contain 80 to 95 per cent zinc by weight. They can be of either the organic or inorganic type, depending on the vehicle or binder used.

Zinc-rich coatings are used for protection of ferrous surfaces exposed to corrosive atmospheres or water. They have been used in touching up galvanized surfaces that have been welded or damaged.

Aluminum Coatings — Hot dip coatings of aluminum on steel are more expensive than zinc but are more resistant to atmospheric corrosion. One type of aluminum coated steel is made primarily for atmospheric protection and is used on such items as folding doors and plant roofing and siding. Service records have shown it can outlast galvanized steel three times.

Another type of aluminum coated steel is made for protection from heat and corrosion. It's being used in such applications as industrial furnaces and auto mufflers.

Chromized Coatings — A diffusion type coating can be produced by heating steel in contact with another metal, such as chromium in powder, liquid, or gaseous form. This produces an alloy-rich surface layer. Chromized coatings of 4 to 8 mils on steel have corrosion resistance similar to that of high chromium steel. Temperature resistance is better. Such coatings are used on parts requiring resistance to wear, corrosion, and high temperatures.

A new electroplating process for depositing chromium is claimed to give better corrosion protection than standard chromium plate because it is crack-free. Coatings of 0.06 mils or better may be applied directly to steel.

* An extra copy of this article and Part I which appeared last week are available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, O.

Coated Abrasive Wheels Can Finish in Corners

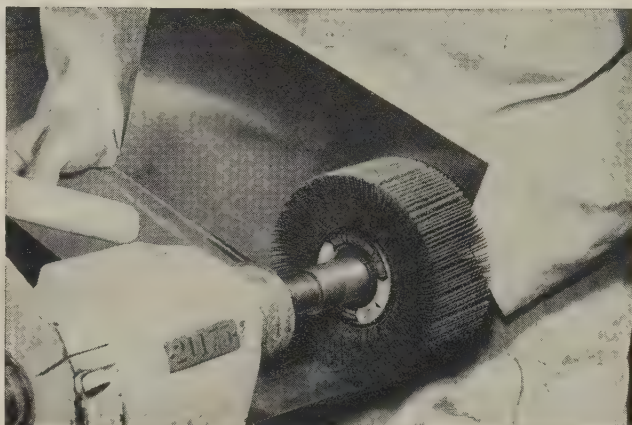
This line of small PG wheels is used for polishing and grinding.

Disposable flanges lock the coated abrasive leaves firmly in place. The flanges are bonded to the hub and provide hub strength.

Flanges are recessed into the side of the wheel. End cap nut is also recessed, so that the wheel can be used flush against a surface.

Wheels have diameters of 6 to 10 in. and widths 1/2 in. and up. Adapter kits make it possible to mount the wheels onto any portable tool or bench lathe.

Write: Dept. F7-268, Minnesota Mining & Mfg. Co., 300 Bush St., St. Paul 6, Minn. Phone: Prospect 11



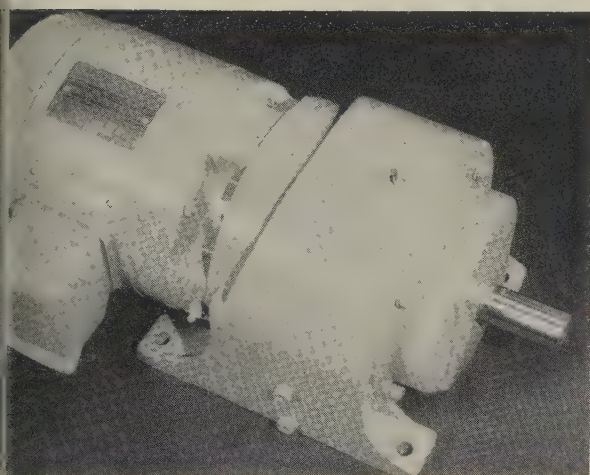
Gear Motors Use Double Helical Gears

This line of integral horsepower motors provides three types of units: An integral unit, an all-motor type which has the drive motor coupled to the gear reducer and mounted on a common carrier, and a separate helical speed reducer which is used with a variety of prime movers.

Mounting dimensions of the three types for similar ratings are identical, and their parts are interchangeable.

Ratio changes are made by changing a pinion and gear in the first stage.

Speed ranges: Single reduction offset shaft, 780 to 350 rpm. Double reduction concentric shaft, 350 to 37 rpm. Triple reduction concentric shaft, 30 to 13.5 rpm. Write: General Electric Co., Schenectady 5, N. Y. Phone: Franklin 4-2211



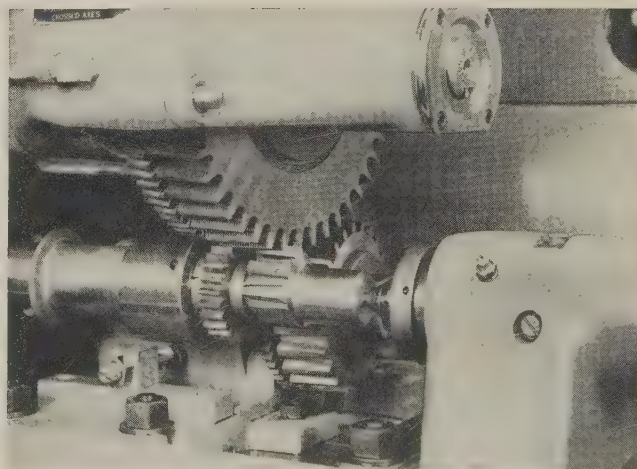
Gear Shaving and Deburring Are Done Simultaneously

This process enables standard rotary shaving machines to combine gear tooth shaving and outside diameter deburring.

The rotary deburring tool in the form of a gear is used. The tool has a conical involute tooth shape which meshes with the gear segment.

The tooth form at the root of the deburring tool is designed so that the shaving burr at the outside diameter of the gear is removed as it is produced. The tool is mounted on a spindle at the rear of the shaving machine head and tailstocks.

A train of gears holds the proper timing relationships among the shaving cutter, work-driving gear, and deburring tool. Write: National Broach Machine Co., 5600 St. Jean Ave., Detroit 13, Mich. Phone: Walnut 1-8980



Gear Classifier

Model GRF is an automated electronic machine that sorts gears into size ranges for assembly operations.

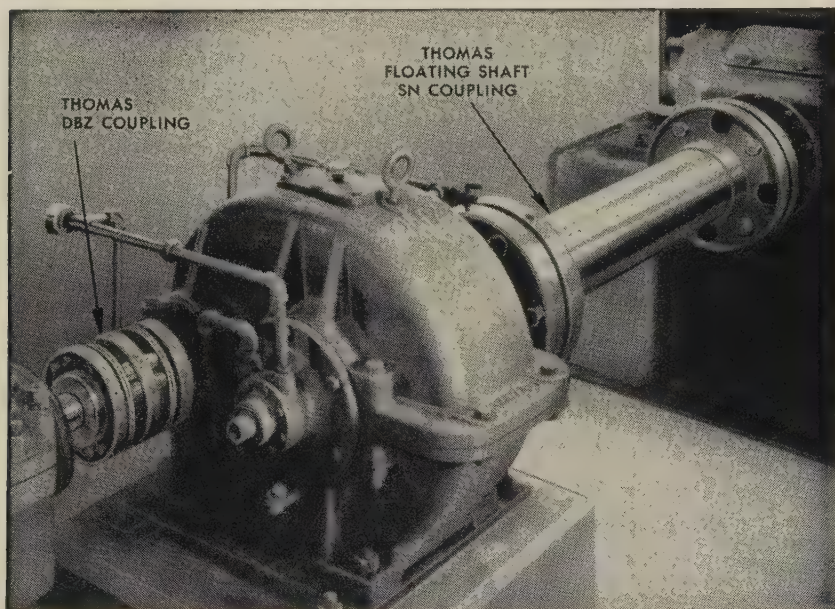
True size measurements of spur or helical gears can be made regardless of helix angle variations because a double-pivoted mounting is used for the upper nonrotating master gear.

The effect of minute master gear tooth or shaft bearing eccentricities is eliminated by the synchronized engagement of the same tooth of the motor-drive master with each gear being measured.

Center distance movement of the upper master gear as the part being tested moves through is measured by a sensing unit. Electronic controls amplify this signal and cause solenoids to open a door in the exit chute of the classifier which corresponds to the

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NO LUBRICATION

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NO WEARING PARTS

Future maintenance costs and shut-downs are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running.

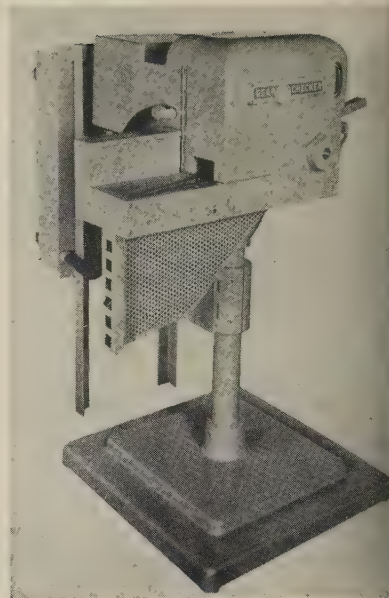
They will protect your equipment and extend the life of your machines. Properly installed and operated within rated conditions, Thomas Couplings should last a lifetime.

Under Load and Misalignment only Thomas Flexible Couplings offer all these advantages:

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Torsional Rigidity
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- 3 Smooth Continuous Drive with
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Write for Engineering Catalog 51A
THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.



size of the part. Write: National Broach & Machine Co., 5600 S. Jean Ave., Detroit 13, Mich. Phone Walnut 1-8980

Motors

The Uniclosed motor comes with the new NEMA ratings up to 1 hp. The drip-proof design provides protection against environmental hazards.



The motor is cooled uniformly by a two-way ventilation system. Write: U. S. Electrical Motors Inc., Box 2058 Terminal Annex, Los Angeles 54, Calif. Phone Richmond 9-9029

Repeating Hammer

Model 300-RH is an air hammer which will repeat 1000 to 2500 times a minute, depending on the air pressure.

On a pressure of 20 psi the hammer will do delicate staking, crimping, and riveting. At 100 psi, it will rivet mild steel 5/8 in. in diameter.

An air-traverse mechanism controlled by a foot valve lowers the

WHY BUY STAINLESS STEEL squares

WHEN IT'S circles YOU NEED?



This circle, $\frac{1}{16}$ " thick x 164" diameter, is one piece of Type 316L stainless steel. Had the customer ordered a square, he would have paid freight on a half-ton of excess material. Also, he would have had the problem and expense of handling the square and cutting the circle.

There are four sound reasons why Carlson customers save time and money when they order the circles they want—rather than the squares they have to cut . . .

If the gauge and size are circle-shearable, there is no extra charge for cutting the circle. This saves cutting labor and scrap handling expense.

If the gauge is such that a cutting charge applies to the square, it pays

to order the circle. This eliminates the extra charge for cutting the original square and involves only the one charge for cutting the circle.

3. Because circles weigh approximately

25% less than squares, there's a substantial saving in transportation costs.

4. Small or medium size circles are often available from stock when squares may not be. The delivery time saved can be an important factor.

When you need stainless steel circles, come to Carlson where we specialize in stainless steel . . . that's your guarantee of dependable service.

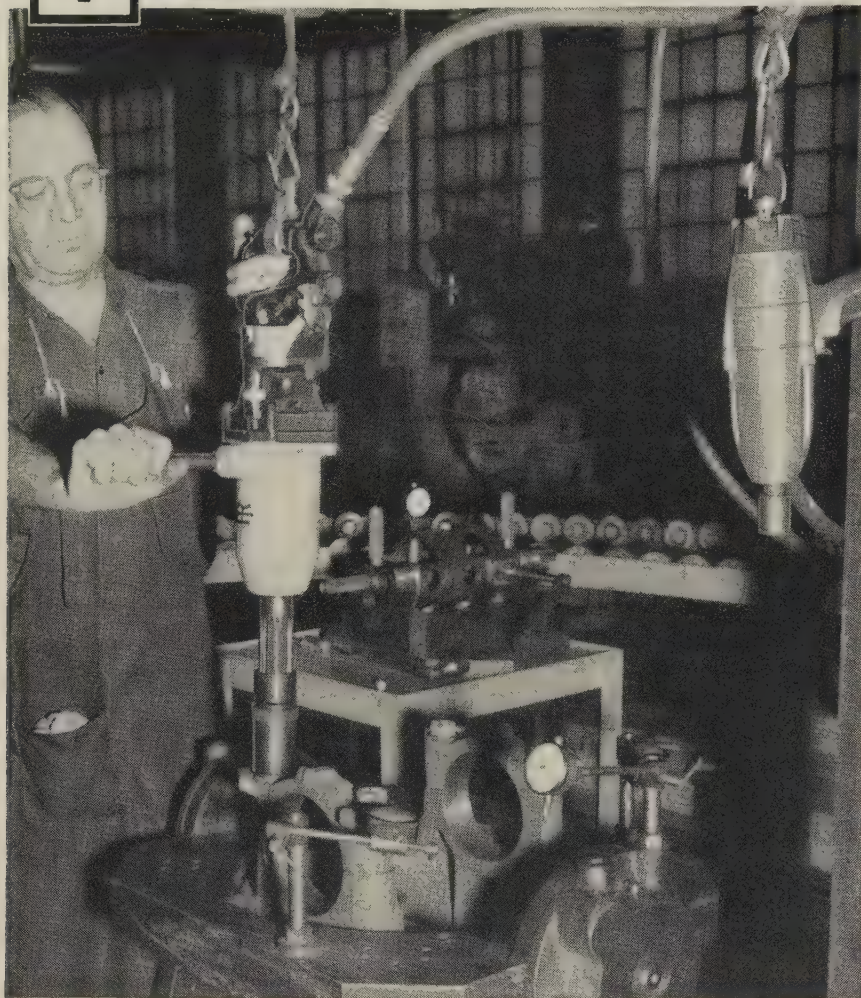
Stainless Steels Exclusively
CARLSON Inc.
 THORNDALE, PENNSYLVANIA
District Sales Offices in Principal Cities

Plates • Plate Products • Forgings • Bars • Sheets (No. 1 Finish)



TORSION BAR

TORQUE CONTROL



TORQUE CONTROL IMPACTTOOLS

consistently run nuts to prescribed torques

I-R Torsion-Bar Impacttools now assure top quality control on these 3 operations:

1. Assembling differential main bearing caps at 450 ft. lbs. both before and after machining as shown above.
2. Preloading differential drive pinion bearing with Impacttools set at 375 ft. lbs.
3. Assembling wheels to wheel hubs at 425 ft. lbs.

Quality control has risen to a new high for this large manufacturer of farm equipment since I-R Torsion-Bar Torque Control Impacttools were installed.

These Impacttools are the *only* power wrenches that deliver full power and speed until the preset torque is reached, and then instantly and automatically shut off.

Now, with Torque Control Impacttools, the company consistently runs nuts to prescribed torques, saves time, improves quality and eliminates hand torque checking operations.

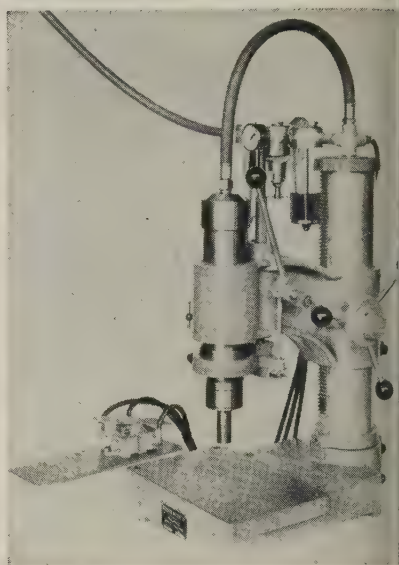
Write for Bulletin 5170 for proof of how these amazing Impacttools can improve quality and cut costs on your own applications.

Ingersoll-Rand

11 Broadway, New York 4, N.Y.

8-524

NEW PRODUCTS
and equipment



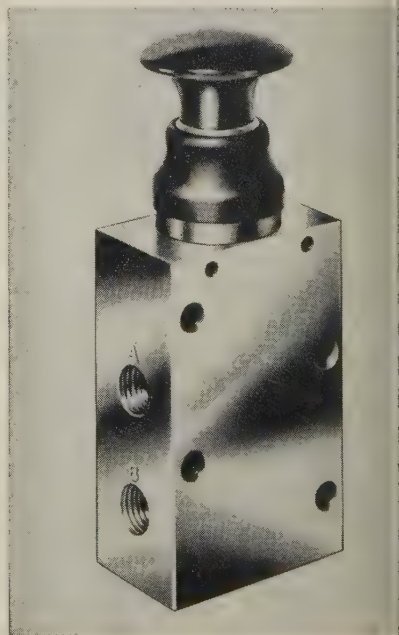
impact tool down to the work and holds it there during the work cycle. Upon release of the foot pedal, the hammer is lifted up from the work.

A depth stop may be set to limit the work progress. Write: Heinrich-Nourse Co., 631 E. Third St., Los Angeles 13, Calif. Phone Mutual 2873

Pilot Air Valve

A small synthetic rubber boot snaps around the stem of this control valve to protect it from dirt and abrasives.

The valve is built for 150-psi operation and has 1/4-in. pipe ports. The valve can be base, panel,

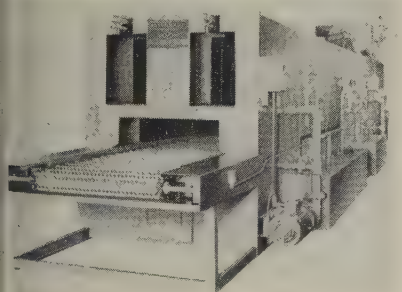


all mounted. It can be used as two or three-way valve. Write: Anna Engineering Works, 1765 Ston Ave., Chicago 22, Ill. Phone: Brunswick 8-2710

Washing Machine

The Triple Tunnel does the work of three separate washers in a single housing. Two overhead conveyers and a flat wire mesh belt conveyor pass through the machine.

Parts are placed on the appropriate overhead conveyor on the basis of later operations. The flat, pre-mesh belt handles parts (including machined ones) which cannot be cleaned and dried effectively when suspended from an overhead conveyor.



The three conveyers can be operated simultaneously or individually. All three lines use common lubrication tanks and a common spray system.

The wash-rinse-dry cycle is automatically timed. Write: Alvey Ferguson Co., 1986 Disney St., Cincinnati 9, Ohio. Phone: Redwood 1-7000

Automatic Machining and Assembly Unit

The Economatic incorporates assembly with machining operations. It produces 489 steering gear parts an hour.

Operations performed: Spot drill for countersink, drill through ream, end cut ream to straight hole, size ream for close hole tolerance, and press in pin.

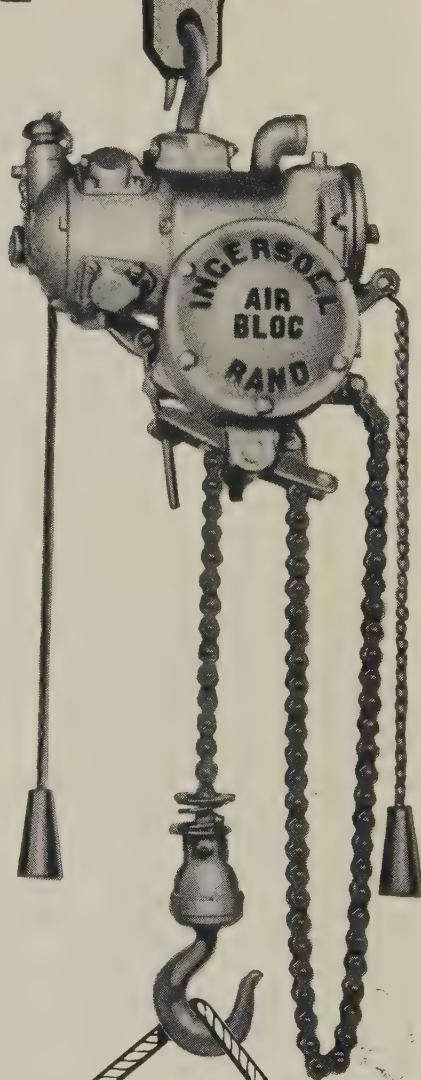
A gripping device unites the work-holding fixture and assembly unit into an integral mechanism. Individual hydraulic cylinders are

small, lightweight air hoist gives you greater VERSATILITY

Ingersoll-Rand AIR-BLOC combines safety, ruggedness and mobility...

Move it anywhere . . . hang it anywhere . . . the I-R AIR-BLOC gives you versatility you never thought possible for speedy handling of loads up to 1000 pounds. No mechanical brake to fail . . . load can't drop even if air pressure fails. Responsive throttle control and automatic up-down-stop permit extremely accurate handling. There's a size just right for your job.

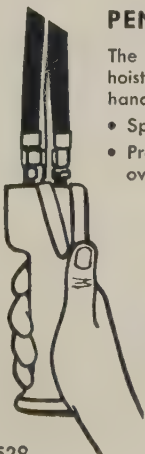
Portable winch-type Utility Hoists, in a wide range of sizes up to 4000 lbs., are also available from Ingersoll-Rand.



PENDENT THROTTLE

The only complete line of air hoists with convenient "one-hand" control.

- Speeds spotting of loads.
- Provides "Finger-tip" control over full range of speeds.

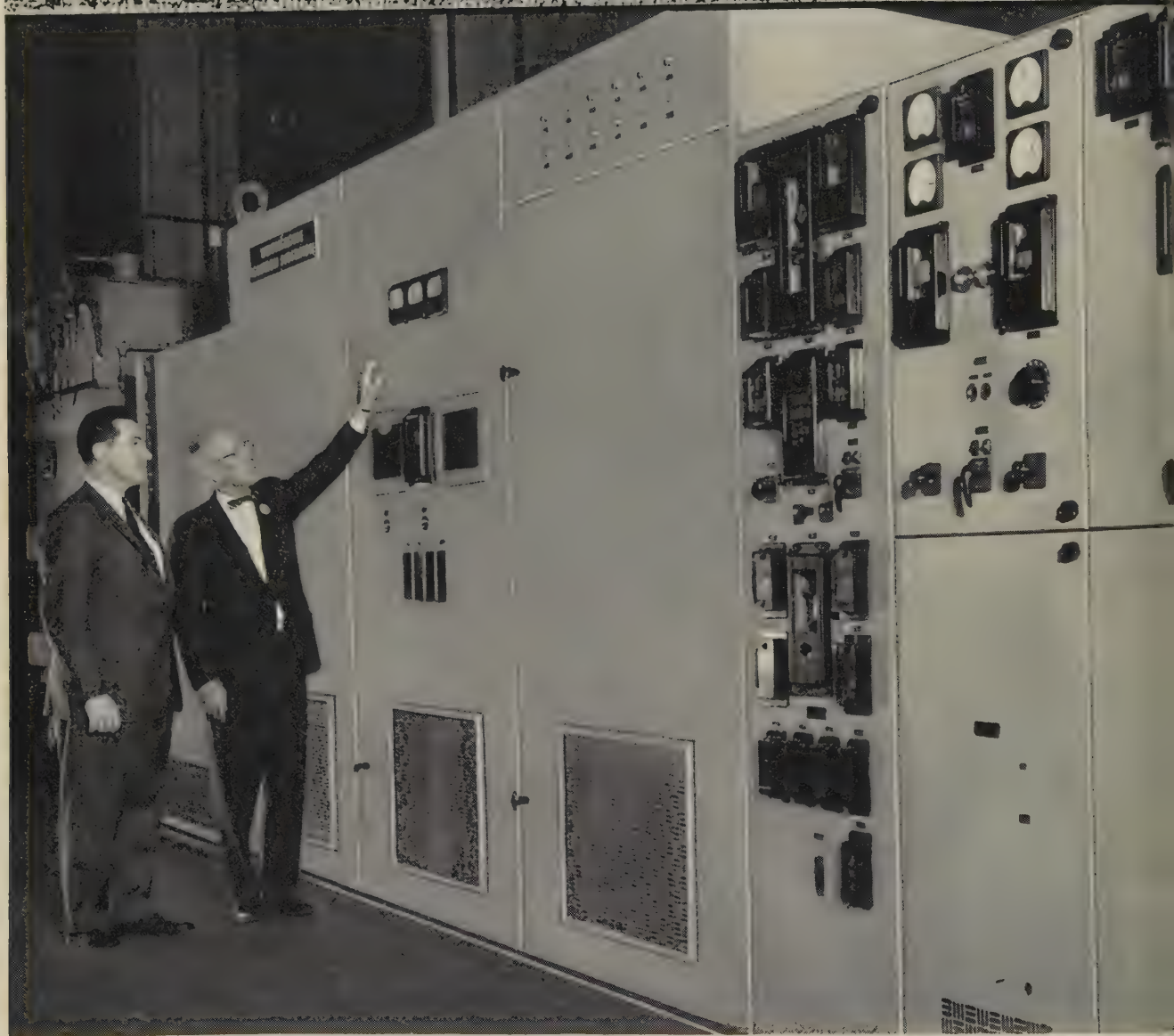


Ingersoll-Rand
11 Broadway, New York 4, N.Y.

AIR HOISTS up to 24,000 lbs.

for dependable DC power...plus

Steel mill lists 7 "musts" for a rectifier.



orders Westinghouse Ignitron



BEFORE MAKING A DECISION on the purchase of a rectifier, the chief electrical engineer of a large Eastern steel mill jotted down 7 "musts". His search for the ideal steel mill rectifier soon ended, for he found that the Westinghouse Ignitron met all of his requirements:

LOW INSTALLATION COST Simply interconnect the adjacent metal cubicles which are pre-wired.

SMALL FLOOR SPACE The Ignitron assembly and auxiliary equipment are contained in compact cubicles which are close-coupled.

NO SPECIAL FOUNDATION Any reasonably level floor of normal strength will do.

SAFE Grounded dead-front metal enclosure permits safe location in any available space. No need for fencing or insulated floors.

LOW MAINTENANCE Principle of operation permits simple design...no major moving parts.

HIGH OVERLOAD CAPACITY Momentary overloads and short circuits won't damage the Westinghouse Ignitron.

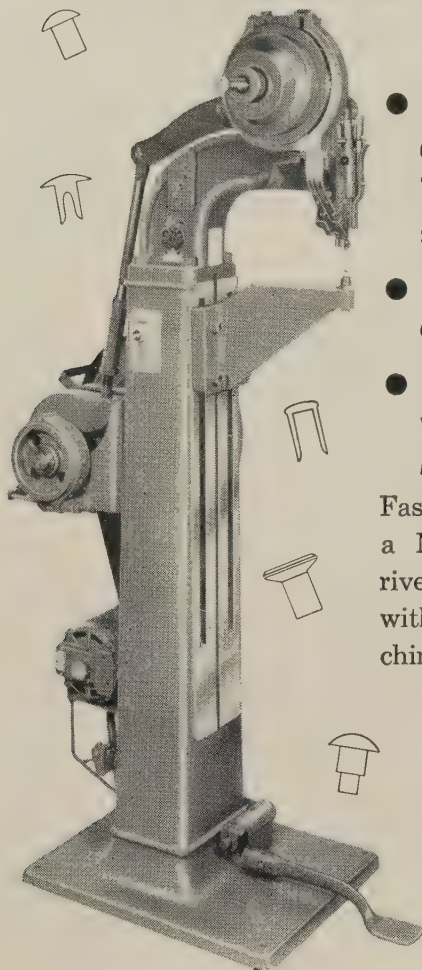
LOW OPERATING COST High efficiency...low arc-drop loss. Simple automatic operation...freedom from problems of high starting demand and synchronization.

Ignitron Rectifiers were invented by Westinghouse and over 5,000,000 kilowatts have been supplied to satisfied users in industry. For the type — pumped or sealed — best suited for your needs, call your Westinghouse sales representative or write to Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pennsylvania.

J-15002

YOU CAN BE SURE...IF IT'S **Westinghouse**

Tubular's model 81 the Versatile riveter



- **AUTOMATICALLY** feeds and sets any style of **TUBULAR'S** rivets up to 16/16" long x 9/64" diam. heavy setting or 3/16" diam. light setting.
- can permanently fasten **HUNDREDS** of different products.
- precision automatic setting to **SAVE** you hours of fastening **TIME** and **LABOR**.

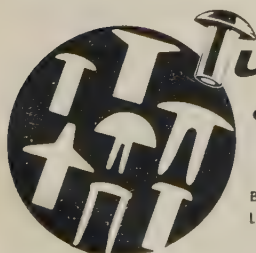
Fastening "the *Tubular* Way" — with a Model 81 single head automatic riveter will equip your production line with the most versatile of riveting machines.

- Motorized or pneumatic operation.
- Has 10" throat.
- Anvil Arm or Horn Adjustment of 19".
- Rivet-setting speed limited only by speed of operator.
- Single revolution clutch eliminates repeat settings, prevents damage to your products.
- Accessories include dial tables, loop anvils, etc. for more economical fastening.

For further information on this Model 81 or Tubular's other automatic riveting machines, write direct or call your nearest Tubular Branch Office.

A FEW OF THE PRODUCTS PERMANENTLY and AUTOMATICALLY FASTENED ON TUBULAR'S MODEL 81 RIVETER

Step Ladders	Suitcases	Appliance Covers	Theatre Seats
Elec. Sockets	Sleds	Windshield Wipers	Radio Relays
Fans	Ball Bearing Holders	Stove Pipes	Tape Measures
Auto Window Frames	Paint Roller Trays	Safety Helmets	Deep Freeze Boxes
Terminal Boxes	Vacuum Cleaners	Baby Carriages	Condenser Cans
Folding Chairs	Pot Cover Handles	Storm Windows	Muffler Holders
Elec. Switches	Missile Parts	Loose Leaf Binders	Eye Glasses
Bearing Housings	Typewriter Arms	Sample Cases	Chimes Brackets
Air Vents	TV Chassis	Toys	Cameras
Auto Window Vents	Percolators	Handbags	Toasters
Golf Bag Handles	Refrig. Trays	Chicken Feeders	Staplers



**Tubular Rivet
& STUD COMPANY**

WOLLASTON (QUINCY) 70, MASS.

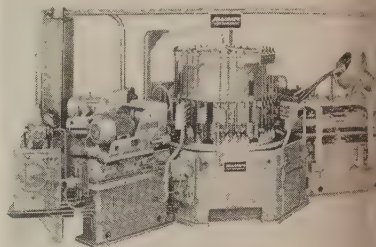
MIDWEST OFFICE & WAREHOUSE — CHICAGO

BRANCH OFFICES: BUFFALO • CHARLOTTE • DALLAS • DETROIT • INDIANAPOLIS
LOS ANGELES • NASHVILLE • NEW YORK CITY • PHILADELPHIA • ST. LOUIS
SAN FRANCISCO • SEATTLE

See your local classified directory for phone numbers

FASTEN AUTOMATICALLY
BETTER and FASTER
with TUBULAR'S RIVETS
and MACHINES

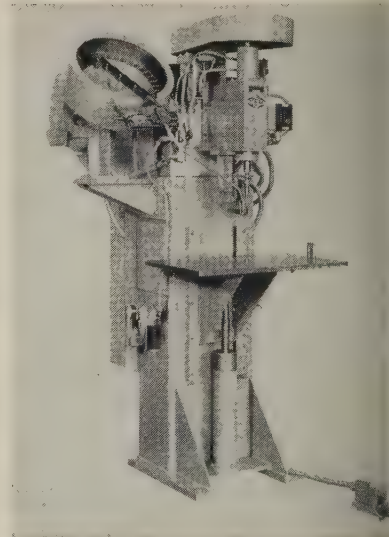
NEW PRODUCTS and equipment



used to press each pin and maintain the close tolerance required in subassembly. Write: Bu Machine Tool Co., Ann Arbor Mich. Phone: Normandy 2-56

Machine Drives Studs

Model STD-1 can produce up to 630 in. lb of driving torque. This heavy duty unit will drive standard studs up to 5/8 in. diameter Schwalbe self-tapping studs, and Tap-Lok inserts. Either single or multiple spindle units are available.



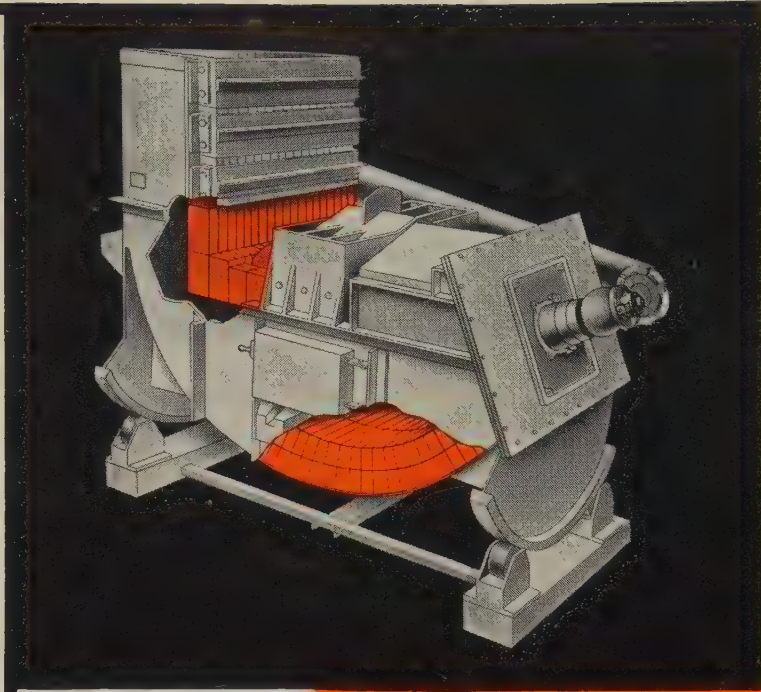
Up to 1000 cycles can be made in an hour. Studs are automatically fed by a hopper. Write: Gr Equipment Co., 13600 Ford Rd Dearborn, Mich. Phone: Tiffa 6-7573

Spring Tester

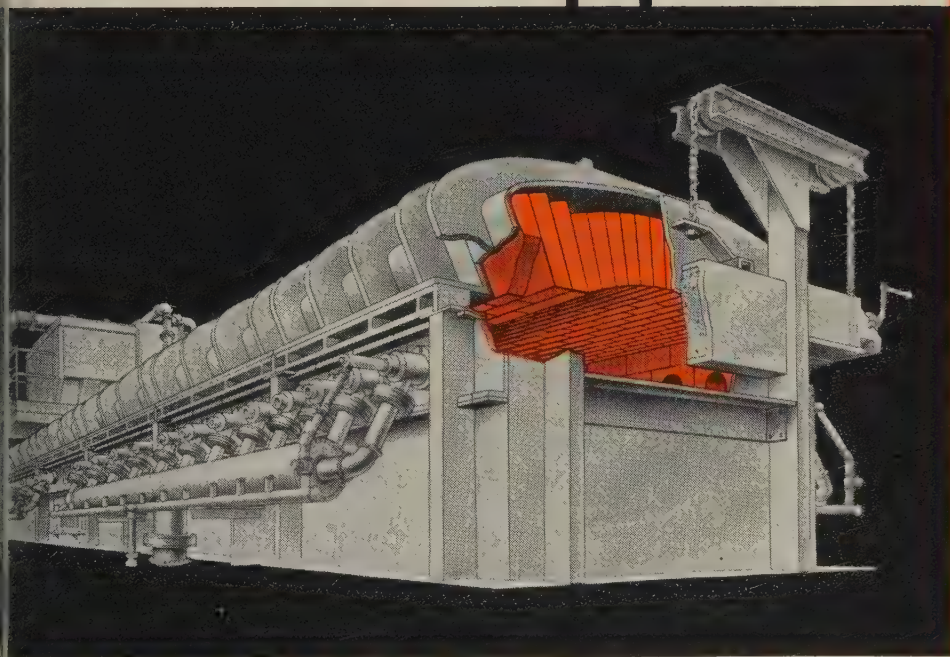
Model 9042 is an electronic unit that can test up to 900 automobile springs an hour. It classifies them into four acceptable zones: an overzone, and an underzone.

The spring is placed on a vertical

Why B&W Allmul Firebrick withstand punishing service in furnaces like these



Direct-fired reverberatory furnace for melting brass, aluminum, and iron. For longer refractory life, B&W Allmul Firebrick are used to line the bath and arch.



In this type of furnace for continuous high speed heating of strip for welding into pipe, temperatures in excess of 3000 F are common and the atmosphere is contaminated with iron oxide. Because of their resistance to spalling and metal penetration, B&W Allmul Firebrick have set new standards for refractory life in bungs, burner blocks and recuperators.

B&W Allmul Firebrick stand up under extremely high temperatures at continued high rates of operation because they are produced from electrically fused mullite grain by a highly efficient process. These top-quality bricks have high hot-load strength, high resistance to spalling, good volume stability and a melting point of 3335 F. They are practical from a cost standpoint for a wide range of applications

in the ferrous and non-ferrous metal industries. Illustrated on this page are a butt-weld furnace as well as a direct-fired reverberatory furnace. Other services are direct and indirect-arc electric furnaces, air furnaces, furnace hearths subject to iron oxide scale attack, crucible melting units and furnaces melting many non-ferrous metals and alloys.

Your B&W representative can show you how B&W Allmul can lower your

refractory costs in many heavy-duty services. Consult him or write for Bulletin R-34A, giving data on B&W Firebrick for exacting services.

B&W REFRACTORIES PRODUCTS: B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick • B&W Refractory Castables, Mortars and Mortars • B&W Silicon Carbide

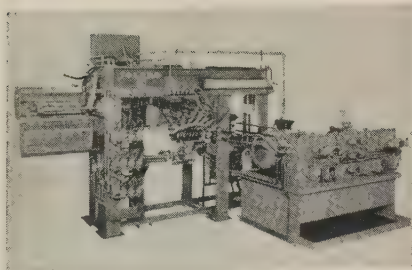


NEW PRODUCTS and equipment

tical turntable which moves it to the bulldozing station where the initial stress is set up.

At the test station, it is compressed a predetermined distance. A dynamic, weighing-type indicating mechanism transmits signals to an electronic counter which in turn controls the color coding equipment.

At the color coding station, paint



indicates that the spring belongs to one of the four acceptable ranges or is too weak.

Springs that are too strong are left unpainted so that they may

be run again. Write: Toledo Scale Co., Toledo, Ohio. Phone: Kingwood 5441

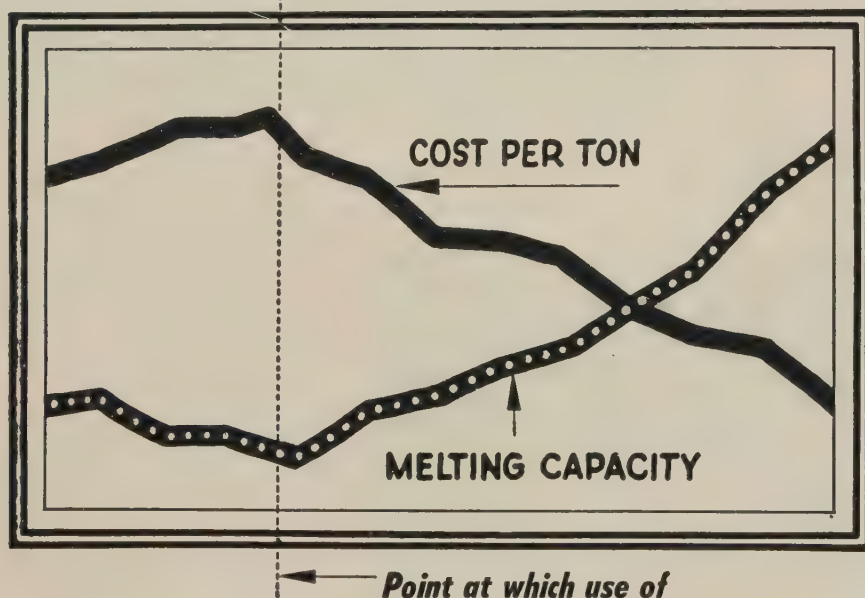
Tempers Sand

Model 3917 adds the proper amount of water to each batch of molding sand automatically. It also automatically cycles each stage of the mixing operation.

Moisture is measured continuously during the mixing cycle. Moisture content can be changed at any time by turning a knob.

A Great Picture

By **GLOBE** Ladle Brick



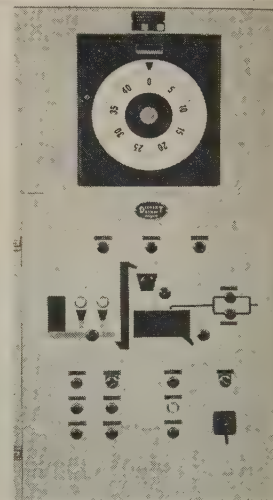
GLOBE SUPERIOR LADLE BRICK

was introduced

When Globe superior ladle brick is specified, cost per ton goes down and melting capacity goes up. These happy conditions come about due to the fact that Globe ladle brick last longer on account of their greater resistance to Open Hearth slags. Globe superior ladle brick are well known in the Steel Industry. There is a type for every need of ladle lining. Our customers have learned to depend on both quality and service that the brick and our Company render.



The GLOBE BRICK Co.
EAST LIVERPOOL, OHIO



Batch sizes can vary as much as 25 per cent. Write: Harry W. Dietert Co., 9330 Roselawn Ave. Detroit 4, Mich. Phone: Webster 3-9790

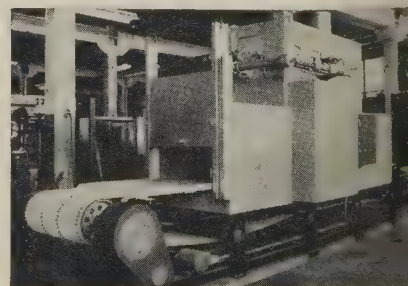
Automated Oven

A conveyer belt carries the product through the heating zone. Loading and unloading can be made automatic.

The oven is gas fired, has a 1 million-Btu burner, and its maximum temperature is 450° F. Uses drying and baking processes, dehydrating, and baking on finishes.

The continuous belt is 36 in. wide. Its speed can be adjusted from 2 to 10 ft per minute.

The baking chamber is 38 in.



NEW PRODUCTS and equipment

e, 24 in. high, and 15 ft long. Interbalanced doors at each end adjustable. Write: Grieve-dry Co. Inc., 1401 W. Carroll, Chicago 7, Ill. Phone: Tay-9-0200

Acid Inhibitor

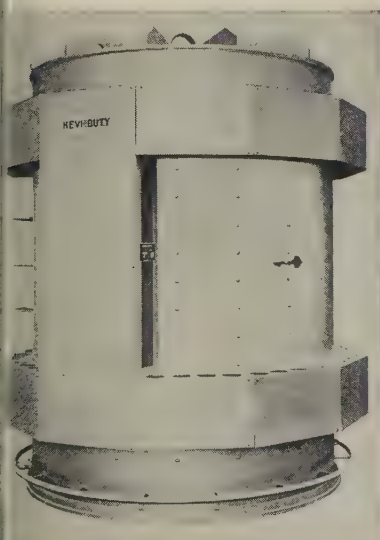
Acid Inhibitor 11 can be used on carbon steel without danger of pitting. It can be used in concentrations of about 0.2 per cent volume.

The inhibitor can be added to cold or hot sulfuric or muriatic acids or to other nonoxidizing acids, such as phosphoric, hydrofluoric, nitric, and citric.

The inhibitor has no odor and does not produce a foam on the acid solution. Acid stable wetting agents may be added when a foam is desired. Write: Enthone Inc., 100 Elm St., New Haven, Conn. Phone: Spruce 7-5581

Vacuum Furnace

Titanium, zirconium, stainless steel, and other materials are hardened and annealed, brazed, sintered, degassed, or soldered in these vacuum furnaces.



Double pump, pit, or bell models operate at temperatures up to 2000° F. Single pump vacuum retorts are used where temperatures must not exceed 1600° F. Write: Erie-Duty Electric Co., Milwaukee 1, Wis. Phone: West 3-2756

Dip Processing

This machine indexes automatically for multistage finishing operations.

It dips baskets of parts in a series of tanks as the baskets travel suspended from a single, closed-loop monorail conveyor.

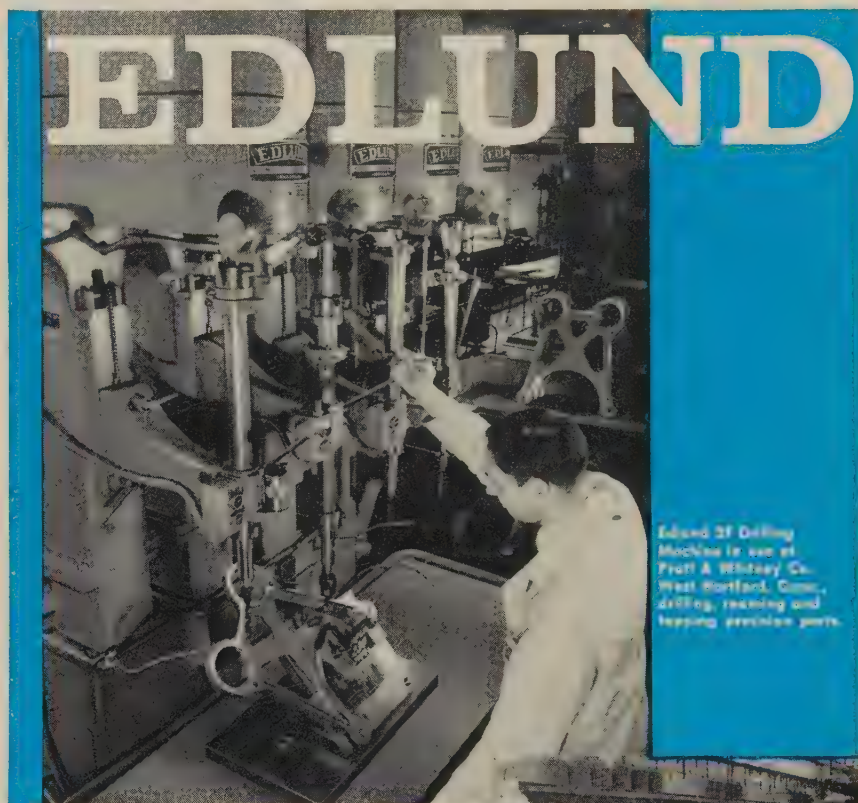
The tanks are only long enough to permit entry and processing of parts.

As the conveyor indexes in transit, the baskets of parts are



the conveyor again indexes, the baskets are raised and positioned for the next cycle.

The indexing is actuated by a floating cam which operates air cylinders spaced throughout the



Edlund Model 2F Drilling Machines at



PRATT & WHITNEY

Pratt & Whitney, famous manufacturer of machine tools—Jig Borers, Keller Machines, Gages and Cutting Tools, uses Edlund Drilling Machines to assist in the production of precision parts.

Modern features —
Flexibility of infinitely variable speeds • Rugged construction for sustained accuracy typical of Edlund • No Loss of Production Time Changing Belts or Gears.

For complete information and specifications about Edlund Model 2F Drilling Machines for your jobs, write for Bulletin 140R.

Edlund 2F Drilling Machine is seen at Pratt & Whitney Co., West Hartford, Conn., drilling, reaming and tapping precision parts.

Production Line of Edlund 2F Drilling Machines at Pratt & Whitney featuring —
Power Table Lift
Extra Spindle Travel
Reversing Motor Tapper

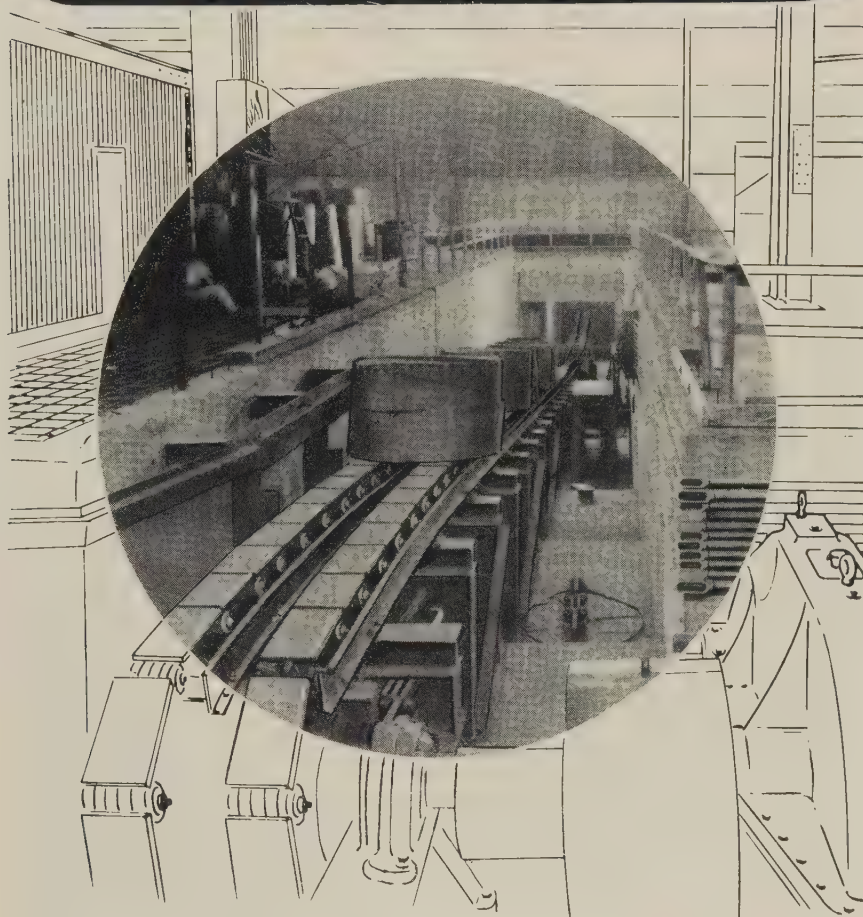
Edlund 1F —
Sensitive machine for small parts and components
Infinite selection of speeds to 18,000 RPM
7" and 10" Overhang
1/2" Capacity
Patented and Bench Models
Write for Bulletin 160

EDLUND REPRESENTATIVES IN MAJOR CITIES
EDLUND
MACHINERY COMPANY
Conland, New York
Division of Harsco Corporation

Edlund Model 2F —
A top production machine for medium to heavy drilling & tapping
Infinitely variable speeds to 3600 RPM
8" — 41" — 15" Overhang
1 1/2" Capacity
Write for Bulletin 140R

MATHEWS

*Engineers and Builders of Conveyers
and Conveyor Systems
for the Metalworking Industries*



Mathews engineers have been working with conveying problems in the metalworking industries for better than 50 years. In this time they have developed outstanding systems of gravity and power conveyers and special conveying machinery for handling coils, sheets, slabs, and bars—through all stages of processing. They know what severe service is, and design equipment accordingly.

That's why—when you buy heavy-duty conveyers—you get the best when you buy Mathews.



MATHEWS CONVEYER COMPANY

GENERAL OFFICES ELLWOOD CITY, PENNSYLVANIA
PACIFIC COAST DIV. MATHEWS CONVEYER COMPANY WEST COAST,
SAN CARLOS, CALIFORNIA
CANADIAN DIVISION . MATHEWS CONVEYER COMPANY, LTD., PORT HOPE,
ONTARIO.

MATHEWS

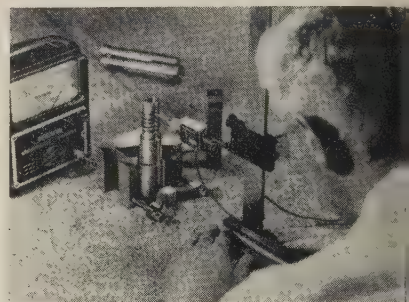
Fifty Years of Leadership in Mechanized Handling

NEW PRODUCTS and equipment

length of the conveyer system
Write: Cincinnati Cleaning & Finishing Machinery Co., Hagemeier Street, Cincinnati 4, Ohio. Phone: Princeton 1-5100

Gaging System

The Electro-Probe is a hermetically sealed gage head that can be used with different types of contacts and contact mountings. It is operated with any one of several types of amplifiers.



The amplitude of the electronic signal (continuously produced) maintains an exact relationship to contact movement.

Linear output is available over 0.060 in. of contact travel.

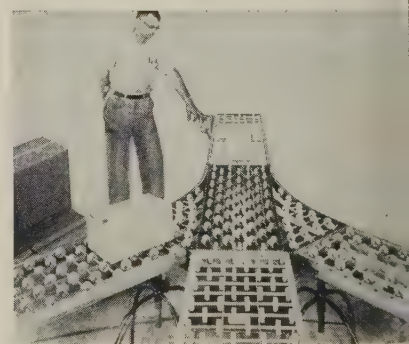
Sensitivity of the gage is said to exceed precision gaging requirements. Write: Federal Products Corp., 1144 Eddy St., Providence 1, R. I. Phone: Stuart 1-9300

Conveyor Switch

This three-way switch automatically sorts packages according to size, weight, or classification. Packages can be sent to the right or left or straight ahead without the use of deflectors.

The switch can be controlled by remote pushbuttons, limit switches, photoelectric cells, and other electrical means.

Limit switches automatically

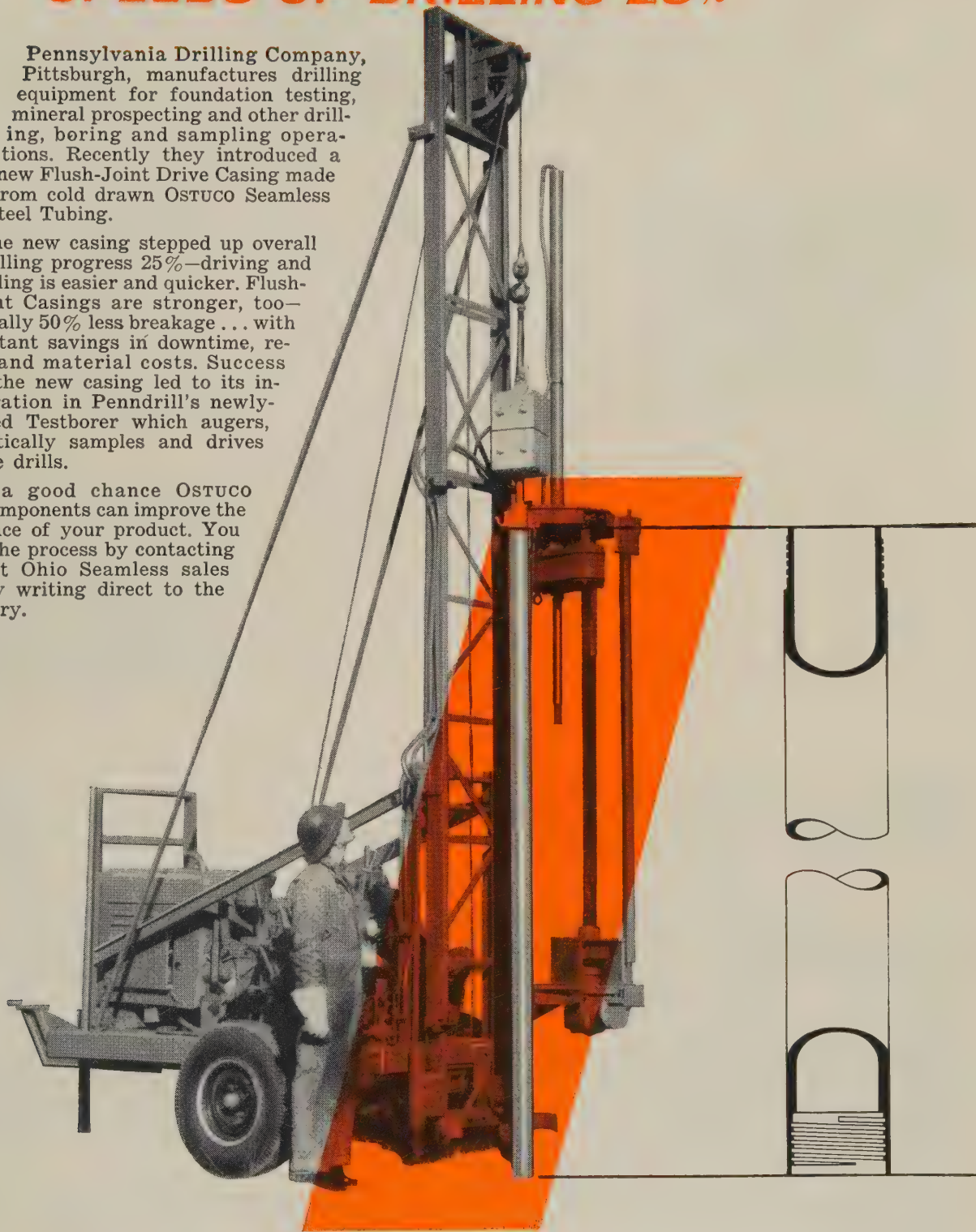


SPEEDS UP DRILLING 25%

Pennsylvania Drilling Company, Pittsburgh, manufactures drilling equipment for foundation testing, mineral prospecting and other drilling, boring and sampling operations. Recently they introduced a new Flush-Joint Drive Casing made from cold drawn OSTUCO Seamless Steel Tubing.

The new casing stepped up overall drilling progress 25%—driving and pulling is easier and quicker. Flush-Joint Casings are stronger, too—actually 50% less breakage... with resultant savings in downtime, repair and material costs. Success with the new casing led to its incorporation in Pennndrill's newly-designed Testborer which augers, automatically samples and drives and core drills.

There's a good chance OSTUCO Tubing components can improve the performance of your product. You can start the process by contacting the nearest Ohio Seamless sales office, or by writing direct to the Shelby factory.



OSTUCO **OSTUCO TUBING**

MANUFACTURED IN

SHELBY, OHIO

EXCLUSIVELY BY

OHIO SEAMLESS TUBE DIVISION
OF COPPERWELD STEEL COMPANY

SHELBY, OHIO • Birthplace of the Seamless Steel Tube Industry in America
SEAMLESS AND ELECTRIC-RESISTANCE WELDED
STEEL TUBING • FABRICATING • FORGING

SALES OFFICES: Birmingham • Charlotte • Chicago (Oak Park)
Cleveland • Dayton • Denver • Detroit (Ferndale) • Houston
Los Angeles (Beverly Hills) • Moline • New York • North
Kansas City • Philadelphia (Wynnewood) • Pittsburgh • Richmond
Rochester • St. Louis • St. Paul • St. Petersburg • Salt Lake City
Seattle • Tulsa • Wichita

CANADA: Railway & Power Engr. Corp., Ltd.
EXPORT: COPPERWELD STEEL INTERNATIONAL COMPANY,
225 Broadway, New York 7, New York

NEW PRODUCTS and equipment

classify by package heights. Scale controls divert underweight and overweight packages while those that pass inspection pass straight through.

A series of classifications can be made to bring like packages into the proper storage line.

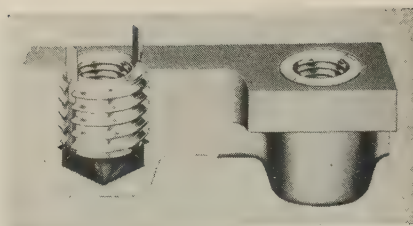
Conveyer widths: 12, 15, 18, and 24 in. **Write:** E. W. Buschman Co., Clifton and Spring Grove Ave., Cincinnati 32, Ohio. **Phone:** Mulberry 1-1600

Threaded Insert

Keensert is a self-locking threaded insert that provides a strong internal thread for bolt attachment in soft materials, such as aluminum and magnesium alloys and plastics.

It is also installed in harder metals to provide a self-locking internal thread in a blind hole.

The inserts can be screwed into tapped holes by hand. Pullout resistance is provided by external



threads along the unit's entire length.

The internal thread, self locking arrangement grips the bolt after about one bolt diameter of thread engagement. **Write:** Newton Insert Co., 6500 Avalon Blvd., Los Angeles 3, Calif. **Phone:** Pleasant 2-4157

Enameling Furnace

These furnace units are adapted to the low-temperature (1000° F) enamels used on aluminum, aluminized steel, and stainless steel.

Heat losses are minimized by lining the shells with insulating brick and block.

The furnaces come with or without forced convection in gas-fired radiant tube or electric models.

There are two sizes. Each is 2

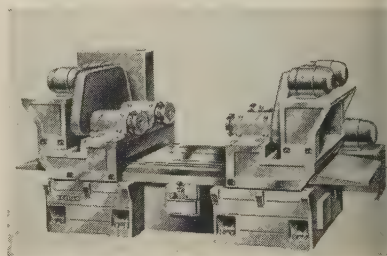
ft wide and 4 ft high. One furnace is 6 ft long; the other, 12 ft. Both units may be joined end-to-end to make longer furnaces. **Write:** Furnace Engineering Dept., Ferro Corp., 4150 E. 56th St., Cleveland 5, Ohio. **Phone:** Michigan 1-8580

Borers Are Big

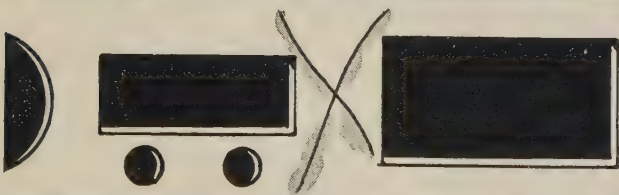
Precision boring, turning, facing, grooving, and chamfering are done by two large boring machines.

The double-end model, 2440, has two bridges that support two spindles and their drive equipment. Several spindles can be mounted on the bridges which are 54 in. wide.

Maximum length of the table



PAINT FLAKES



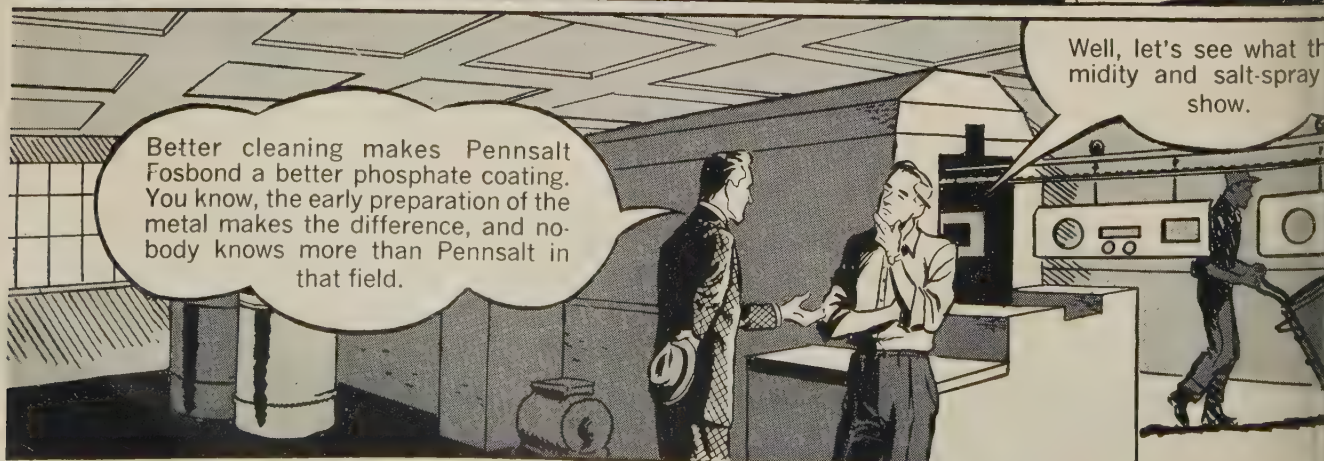
AND HEADACHES

Mike's been screaming about the paint flaking off these dashboard panels. Seems the iron phosphate coating isn't holding tight.



Better cleaning makes Pennsalt Fosbond a better phosphate coating. You know, the early preparation of the metal makes the difference, and nobody knows more than Pennsalt in that field.

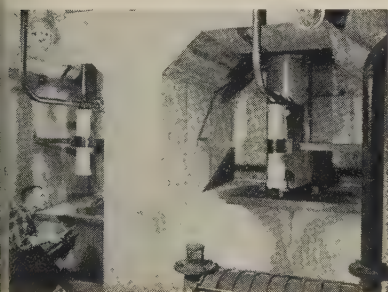
Well, let's see what the mildity and salt-spray show.



oke is 40. Table fixture pads 28 x 46 in. The single-end model, 1440, is identical to the 2440 except that it has only one bridge, mounted on the lefthand end. Write: Ex-Cell-Corp., 1200 Oakman Blvd., Detroit 32, Mich. Phone: Townsend 900

Hydraulic Accumulators

This line of piston-type accumulators can be mounted in any position. There are 14 models with oil capacities from 10 cu in. to 10 gallons, and four inside diameter sizes ranging from 2 to 7 in.



The accumulators are used for shock absorption in addition to functioning as auxiliary or emergency sources of hydraulic power. Write: Industrial Hydraulics Div., Parker Appliance Co., 17325 Euclid Ave., Cleveland 12, Ohio. Phone: Kenmore 1-3000

Cutting Oil

Gulfcut heavy duty soluble oil combines the cooling ability of water with the lubricity and protection of oil.

The emulsified cutting oil includes chemically active compounds to protect against foaming and welding.

The average mixture is 25 parts water, 1 part oil.

Uses include heavy hogging cuts, fast fine cuts, boring, and grinding of ferrous and nonferrous metals and alloys, including titanium alloys.

The oil is particularly good for metals with low machinability ratings. Write: Gulf Oil Corp., Gulf Bldg., Pittsburgh, Pa. Phone: Express 1-2400

Ultrasonic Cleaning

This generator, Sonogen Model AP-25-B, is used with tank-type or stainless steel immersible transducers. It is used for cleaning antifriction bearings and other small parts that must be dirt-free before assembly.



For cleaning-rinsing and other two-step operations, the generator output can be switched between transducers mounted in separate tanks.

Peak power on pulses is 500 watts; average power, 125. Write: Branson Ultrasonic Corp., 40 Brown House Rd., Stamford, Conn. Phone: Davis 4-6721

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Yes, Carl, we've solved this same problem for other automobile makers. I'm confident our Fosbond® system will increase paint adhesion on the zinc parts, and won't powder on the steel parts.

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And did the trick, Brooks. Even after the salt-spray exposure, the paint stays on the scratch. And they're not wiping powder off the steel, either.

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Nut Co.
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Houston 10, Tex.

Texokana Bolt &
Nut Co.
1810 S. Akard St.,
Dallas 15, Tex.

Penn Bolt &
Nut Co.
P.O. Box 9967,
Pittsburgh 33, Pa.

BOLTS

NEW Literature

Write directly to the company for a copy

Car Shaker

Bulletin 07B7221B, 6 pages, describes the pushbutton unloading of granular material from open, hopper-bottom gondola cars. Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Atmosphere Equipment

Ammonia dissociators and exothermic and endothermic atmosphere generators are described in bulletin 25, 4 pages. C. I. Hayes Inc., 822 Wellington Ave., Cranston 10, R. I.

Steel Strapping

This 12-page bulletin lists uses of $\frac{3}{8}$ to $\frac{3}{4}$ in. flat strapping. A. J. Gerard & Co., 1950 Hawthorne Ave., Melrose Park, Ill.

Faster Material Handling

Bulletin ECR-106B tells how two-way radios on material handling vehicles speed production. Communications Products Dept., General Electric Co., Syracuse, N. Y.

Flexible Shafts

Line, remote control, and power driveshafts and their specifications, torque loads, and drive speeds are presented in bulletin 5608, 4 pages. Industrial Div., S. S. White Dental Mfg. Co., 10 E. 40th St., New York 16, N. Y.

Plug Valves

This 12-page bulletin tells how to select and apply lubricants to plug valves. Walworth Co., 60 E. 42nd St., New York, N. Y.

Heat Exchangers

Design and cost factors of a tubing with an integral fin $\frac{1}{16}$ in. high are covered in this 20-page bulletin. Wolverine Tube, division of Calumet & Hecla Inc., Guardian Tower, Guardian Bldg., Detroit 26, Mich.

Impregnation Sealant

A metallic sealant for porous castings is described in bulletin 8-57, 4 pages. Dept. F-8-57, Imprex Division, Ideal Industries, 2023 S. 60th St., Milwaukee 19, Wis.

Surface Equipment

Surface plates and straight edges are described in bulletin 823, 4 pages. Challenge Machinery Co., Grand Haven, Mich.

Market Outlook

STEEL PRODUCTION in the first eight months of this year set an all-time record for the period.

Output in the final four months of this year needs to average only 86 per cent of capacity to make this year's total equal to the 117 million ton record set in 1955.

THE RECORD—Production in the first eight months of this year totaled 78.6 million net tons of steel for ingots and castings. To bring this year's output up to the record 117 million tons would require production of 38.4 million tons in the final four months.

The last four months of the year include one that's historically high in steel production—October.

GOOD MONTH—Even though steel output this summer is lower than it was earlier this year, the August yield of 9,180,000 net tons surpassed July's 8,896,000 tons. The only times more steel was turned out in August were in 1953 (9,405,580 tons) and in 1955 (9,594,545 tons).

Steel production in the first eight months of this year was 6.2 million tons ahead of the corresponding period last year.

OUTPUT RISES—The August production averaged 80.5 per cent of capacity, compared with 73.5 per cent in July. As August moved along, operations strengthened. By the last week of the month (week ended Sept. 1), the operating rate was up to 82.5 per cent of capacity. The 82.5 per cent rate was achieved in the filling of orders that were placed a month or more ago—and ordering then was not brisk.

Steel companies are hoping for a pickup in steel demand when the auto industry swings onto its 1958 models in the next few weeks.

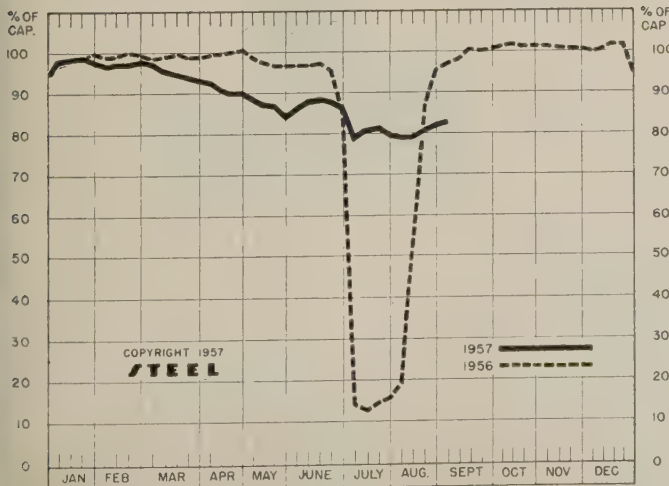
USAGE EXCEEDS BUYING—Steel consumption is not as low, though, as demand. Steel users have been living to a considerable extent on their inventories.

Absence of a steelworkers' strike this year and an increase in steelmaking capacity made steel users confident they could obtain steel promptly. They saw no need to carry large stocks, so they started to use them and reduced their new buying accordingly.

SCRAP DISSENTS—Completion of inventory reduction and an upturn in demand from the automotive industry would suggest that production would rise in the last three or four months of this year. Running contrary to such a move are scrap prices, often regarded as a bellwether of steel production. For the second consecutive week, STEEL's price composite on steelmaking scrap declined. In the week ended Aug. 28, the composite was \$52.17 a gross ton, a drop of \$1.33 from the preceding week.

STEEL COSTS RISE—Steel started last week to cost the user more although only one producer raised prices. The additional cost comes from a 7 per cent rise in freight charges, which the user pays. The producer which upped steel prices is Kaiser Steel Corp., Oakland, Calif. Although it raised prices pretty much in line with the rest of the industry at the beginning of July, it advanced prices \$1 a ton on Aug. 26 on pig iron, plates, structural shapes, hot-rolled sheets, and hot-rolled strip.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

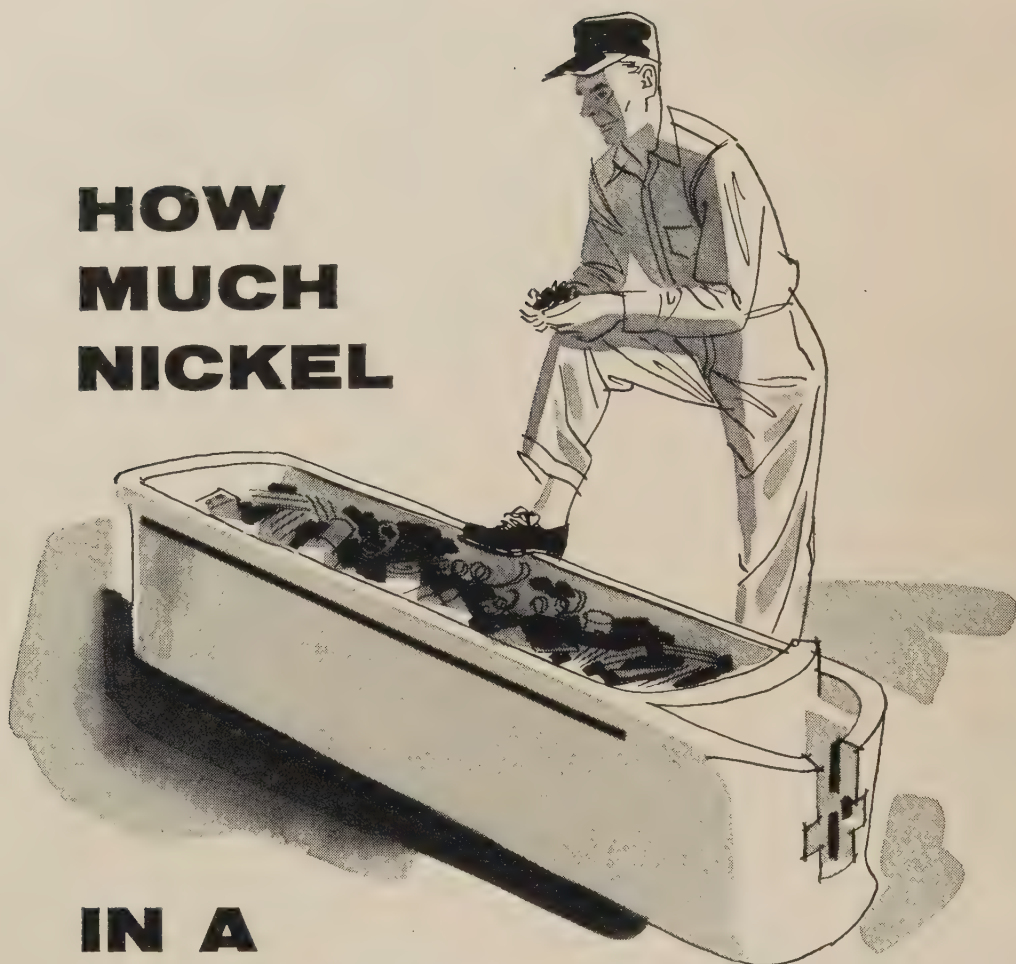
	Week Ended Sept. 1	Change	Same Week 1956	1955
Pittsburgh	84	+ 2.5*	97.5	95
Chicago	84.5	- 2*	97	95.5
Mid-Atlantic	87.5	- 0.5	96	94
Youngstown	79	0	95	96
Wheeling	92	+ 7	97.5	93.5
Cleveland	89	- 0.5*	103.5	98
Buffalo	95	0	105	105
Birmingham	85.5	0	93.5	93.5
New England	49	+ 2	90	72
Cincinnati	88.5	+ 3.5*	68.5	90.5
St. Louis	76.5	- 3	89	105
Detroit	91	+ 7*	92.5	87.5
Western	98	+ 1	94	103
National Rate ..	82.5	+ 0.5	97	92.5

INGOT PRODUCTION†

	Week Ended Sept. 1	Week Ago	Month Ago	Year Ago
INDEX	132.7†	130.8	126.6	148.7
(1947-1949=100)				
NET TONS	2,132†	2,101	2,033	2,389
(In thousands)				

*Change from preceding week's revised rate.
†Estimated. ‡Amer. Iron & Steel Institute.
Weekly capacity (net tons): 2,559,490 in 1957; 2,461,893 in 1956; 2,413,278 in 1955.

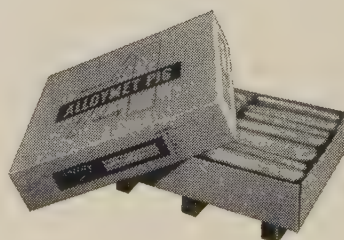
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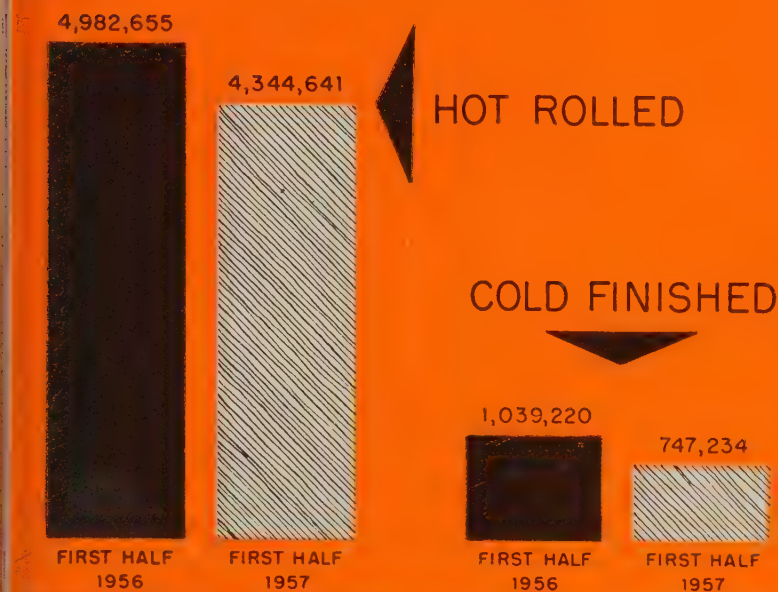
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Bar Shipments Lag But— Fourth Quarter Pickup Coming

(Mill Shipments, Net Tons)



Source: American Iron & Steel Institute.

Barriers Optimistic

September orders are less than desired, but producers expect auto and equipment makers to step up demand in the fourth quarter. Gains may be slow in showing up

BARMAKERS expect to pick up speed in the home stretch and end the year with a good fourth quarter. But you'll have to look closely to see any bright spots in the immediate sales outlook. This product with a multitude of uses is selling slowly now, but encouraging signs are there for the seeing. Here's why some sales managers are optimistic about the fourth quarter:

1. A midwestern producer of alloy bars says orders for early fourth quarter are well ahead of year-ago levels. Ordering usually improves after the third quarter, but October, 1957, should be better than October, 1956.

2. An eastern supplier of cold-finished, leaded bars says sales are strong in New England. Converters are buying all the hot-rolled, leaded bars they can obtain.

3. A maker of hot-rolled bars in the Pittsburgh area reports that the downward sales trend of recent months has been reversed. A wide variety of consumers contribute to the increase. August sales were slightly above July levels. If automakers' purchases increase in the fourth quarter, October shipments should surpass August's.

4. An eastern reinforcing bar firm says many customers are rushing for tonnage in the late third and early fourth quarters as

the construction season reaches its peak. Growing interest in re-bars could tighten the entire bar market, a sales manager believes.

5. A Cleveland area mill expects demand from automakers and farm implement producers to pick up the remainder of the year. Most customers are trying to operate with lowest possible inventory, so stocks can't be cut much farther, adds that maker of hot-rolled bars.

No Way but Up—Noting these bright spots, bar salesmen believe their market has no place to go but up in fourth quarter. The gain will be slow, and it begins from a low point. A major hot-rolled bar producer complains that July was the lowest sales month since July, 1954.

American Iron & Steel Institute statistics show that bar shipments declined slightly in the first half, with cold-finished bars taking the greatest proportional fall (see chart above). First-half shipments of hot-rolled bars this year were 49 per cent of total 1956 shipments. The figure for cold-finished bars was only 43 per cent. It should be noted that last year's steelworkers' strike cut into hot-rolled production far more than cold finished, accounting for some of the difference.

Any improvements in sales during August were made without the benefit of large-scale automotive buying. A midwestern supplier of hot-rolled bars comments that free supply limits forward buying by auto producers. The firm has little reason to believe automakers will step up purchases in September. Other producers look for improvement in automotive buying in October.

Need Boost—Most cold-drawn bar mills need an improvement in several consuming industries to snap out of a prolonged slowdown. Demand from textile and machine tool industries is off. Sales managers hope for a fourth quarter increase, but they concede it will probably be slow to develop.

Another slow-moving product, alloy bars, may be quicker to improve. Farm implement requirements for carbon and alloy bars are expected to rise in the final three months. A Pittsburgh pro-

ducer notes increases in inquiries about alloy bars but concedes that these are not backed by large orders.

Producers of lawnmowers, for example, have not placed as heavy orders as is customary for September and October, when their requirements are usually at peak levels.

Inventories the Key—The chief reason for optimism among bar suppliers, in the face of several slow markets, is the belief that many consumers have completed their inventory reduction drive.

A leading midwest producer of hot-rolled bars believes that its 5 per cent gain in sales from July to August was due completely to low bar supplies in hands of consumers.

Comments a sales manager: "No single industry is ahead of the others in bar consumption. We need, and expect, gains in fourth quarter buying by a few leading industries such as auto makers and farm equipment producers to give real strength to this market."

Structural Shapes . . .

Structural Shape Prices, Page 193

Highway construction, especially bridgework, continues outstanding in an otherwise quiet structural market. Fabricators are busy, but competition for contracts is strong. The volume of unfilled business on the books of the smaller shops is shrinking, while backlogs of the medium and large fabricators still run well into next year.

The supply of wide flange sections continues tight. One producer in the Mid-Atlantic district is running four to six weeks behind on delivery promises. Standard shapes are in a better position.

Structural fabricating shops in New England, outside the Boston area, are booking a steady volume of business. In more cases, shipments are in excess of new orders. Boston shops, closed down by strikes since July 16, are reducing specifications for plain material.

In Los Angeles, final settlement of a strike of southern California building trades may have come too late for large school remodeling projects. Construction work valued

at close to \$15 million is reported up for bids.

Steel Bars . . .

Bar Prices, Page 193

Hot-rolled bar mills report increase of about 5 per cent sales during August. September sales are expected to remain about the August level, unless present smattering of orders from automakers develops into sizable volume. Automotive requirements have risen only gradually from midsummer lows. Most other consumers of bars have not altered their buying pattern.

Cold-finished bar sales continue light. Producers are filling orders with leadtime of substantially less than one month, making it difficult to predict when demand will increase.

In the Pacific Northwest, rolling mills report unchanged operations. Their backlogs are declining. Recent placements have been confined to a fair volume of small tonnages. Some road projects are pending, but no large steel quantities are involved.

LOOK... NO HANDS!



heets, Strip . . .

Sheet & Strip Prices, Pages 194 & 195

Automakers are not expected to make their full weight felt in the cold-finished sheet market for another month. Orders received for production of 1958 models have been for small tonnages and appear designed to fill in holes in inventories. Some disappointment is felt because automotive orders have lacked strength, but most processors don't expect to operate at full sheet making capacity until October or November.

Heavier demand for hot-rolled sheets is necessary before sheet mills operate above 75 or 80 per cent of capacity. Hard selling will be needed to fill up September-October rolling schedules.

Producers of galvanized and hot-rolled sheets and strip have open orders on September order books. Cold-rolled and alloy strip sellers have only scattered indications of an upturn in automotive buying this month. Low demand from building industries holds down sales of galvanized sheet.

More encouraging reports are be-

ing received from the St. Louis district. A substantial upturn in hot and cold-rolled sheet orders is underway there. Bookings are coming in at an accelerated pace from fabricators in the Southwest who apparently have liquidated their surplus stocks. The new demand is coming from a variety of industries and is especially strong for cold-rolled sheets. Capacity operations in cold mills in the district throughout September are in prospect.

General Stores Office, Navy, Philadelphia, is closing Sept. 6 and 9 on sheets, strip, and bars for fourth quarter delivery. One lot includes 850 tons of zinc-coated carbon sheets, 500 tons of carbon strip and sheets, and 455 tons of hot-rolled medium carbon bars.

Wire . . .

Wire Prices, Pages 195 & 196

Manufacturers wire sales in Pittsburgh are expected to increase in September, following a slow period caused by vacations and low automotive requirements. Gains will probably be slight. Wire mills

continue to book orders for delivery later this month, and most of the orders are for small tonnages, showing that users are maintaining low inventories. Sales managers assume that automakers will only fill in holes in inventory this month, waiting until October before placing larger orders.

Merchant wire sales continue to be slow, in the dull pattern of early third quarter.

In the New England district, a slight increase in demand for furniture wire coils is noted, but interest in cold heading grades lags. Buying interest in wire rods also is slow, and the volume booked this month may be the lowest in years.

Warehouse . . .

Warehouse Prices, Page 198

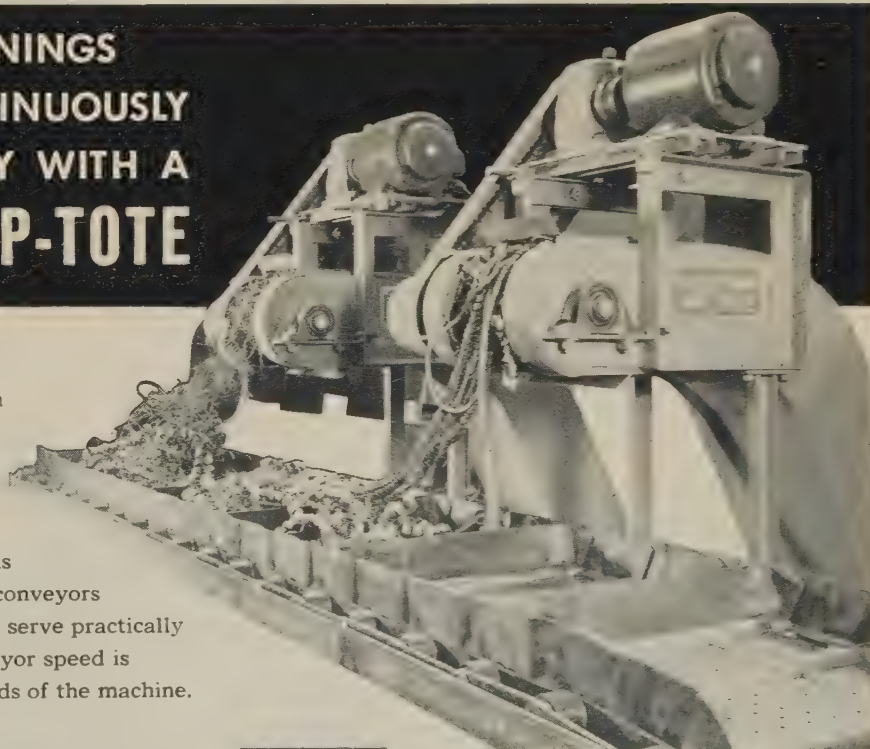
Continued easing in the few remaining products still in short supply has curtailed the number of rush orders placed with warehouses. Distributors report no difficulty in obtaining any products except heavy plates from a few

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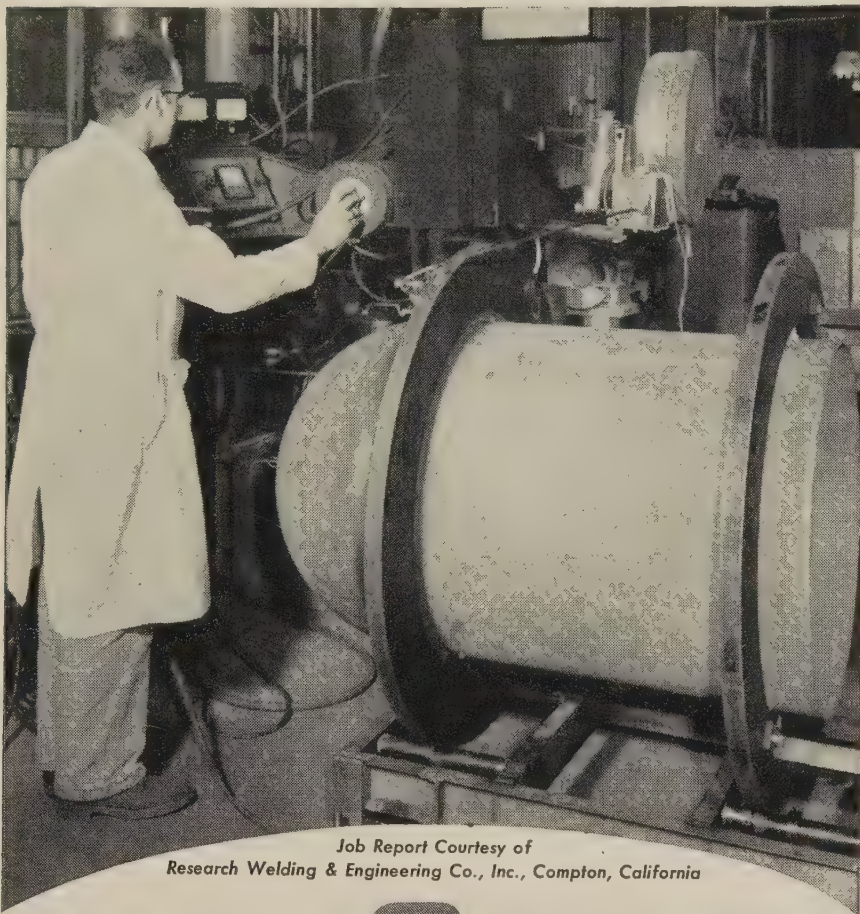
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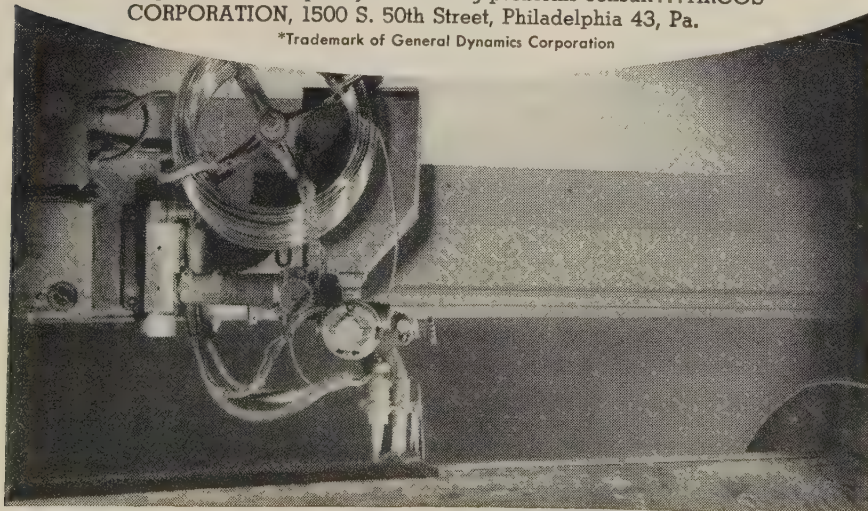
ARCOS



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Light weight was important in this welded missile component that was required to hold air under 3,000 p.s.i. pressure. After making the root pass weld with the Arcos EB* consumable insert, the weld was completed by submerged arc welding with Arcos CHROMENAR CMV welding quality wire. CHROMENAR CMV was selected because its weld metal could be heat treated to match the base metal with tensile strength in excess of 200,000 p.s.i. and pass x-ray inspection. For help on your welding problems consult... ARCOS CORPORATION, 1500 S. 50th Street, Philadelphia 43, Pa.

*Trademark of General Dynamics Corporation



wide plate mills and wide flange beams. They have lost several large customers who can obtain the plates they require from mill. As a result, their over-all sales show no sign of improvement. In September, despite increases in inquiries from small fabricators.

Automakers are placing large orders with distributors in the Los Angeles district. Industrial construction also is increasing in the area, resulting in a heavier demand for plates, reinforcing bars and structural shapes.

Distributors in the Philadelphia district have revised cold-finished bar prices and are quoting on a "net price per size" basis. In arriving at the new schedules, they took into account, as a unit, the base and size, analyses, and quality extras. An advance was effected in some items; a reduction in others. Under the revisions, one popular item, (1 in. round C1018) is quoted at 11.51c, warehouse.

Plates . . .

Plate Prices, Page 193

Sheared plate producers anticipate an active fourth quarter. October will be virtually blanketed out because of expected carryover.

Suppliers of universal and strip mill plates are in good balance with demand and may continue so for a while. Strip plates probably will be offered less freely over the remainder of the year because of the likelihood of heavier demand for sheets and strip. But inquiry for that product may not be as heavy. For one thing, demand from railroad equipment builders for it and universal plates is expected to be definitely lighter.

Buying interest in floor plate also is lighter. One producer has experienced a drop of about 20 per cent from late May and early June.

Carbon plate bookings in the New England district are off mildly, with the exception of orders from shipbuilders. Pressure for tonnage has slowed to a point where more selling effort is required. Clad plates and heads are moving slowly; alloy plate demand is holding up well. Except for gages over 1.5 in., carbon plate deliveries are five to six weeks

most mills now booking for September.

In the Pittsburgh area, a mill rolling plates 160 in. wide has been about one month behind schedule. It is trimming its quotas for each customer for the remainder of four months of this year. The mill hopes to bring its production back to schedule by the yearend without "blocking out" any months in the fourth quarter.

Tubular Goods . . .

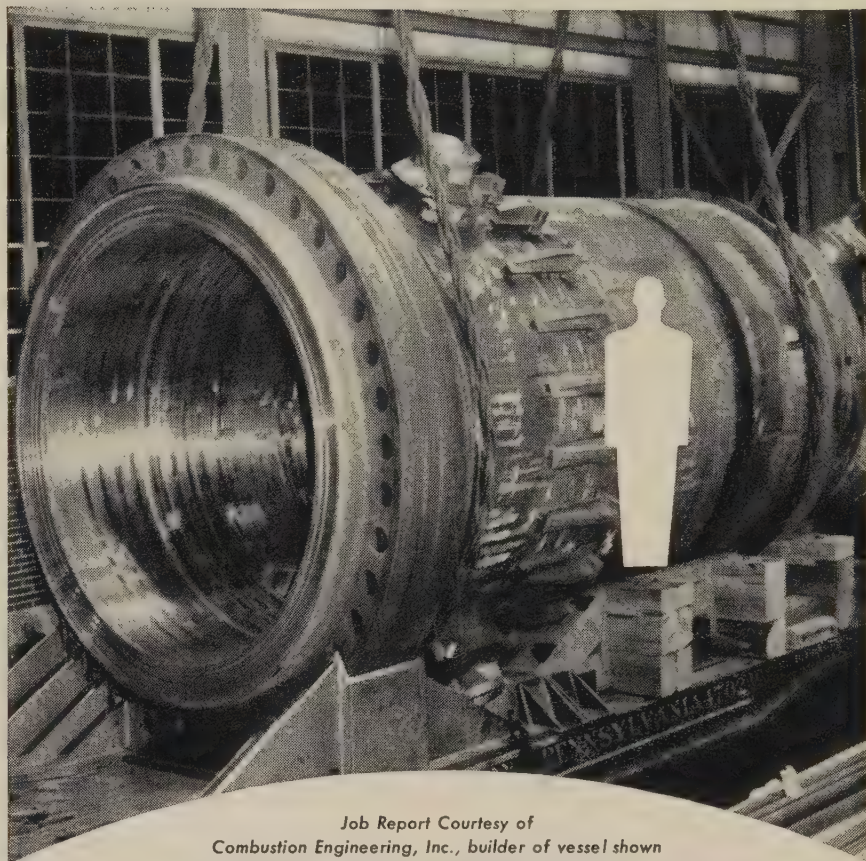
Tubular Goods Prices, Page 197

A Pittsburgh producer of oil country products says that sales for the second half will be ahead of those in the like 1956 period, despite a slight decline in purchases from American firms. While the company has made a greater effort to sell to drillers in the Southwest, it has experienced sharp increases in demand from foreign countries. Demand is on the upswing in several countries which have never been important oil markets because of the troubled situation in the Middle East. As a result, oil country tubemakers sell to foreign countries as well as American drillers will have no trouble in selling fourth quarter production of drill pipe and tube. Pipe sold to the building industry continues to move slowly, despite reports of a gain in housing starts. A firm selling pipe to steel mills, where it is used in open-hearth lancing, says demand is only fair now, but it is expected to improve if steel production rises in fourth quarter.

Distributors in New England have substantial stocks of seamless pipe 10 in. and under. They report utilities are withholding shipping instructions on some orders placed earlier this year. They probably overordered. But welded inventories also are ample, with mills shipping within two weeks after receipt of orders.

In the St. Louis district, pipe mills are becoming more active and are operating at about 80 per cent capacity. Demand is moderately heavier although there is little forward buying. September schedules are 75 per cent filled, but there are virtually no bookings for October. Demand in that district

This WELDED nuclear pressure vessel holds a practical idea for you



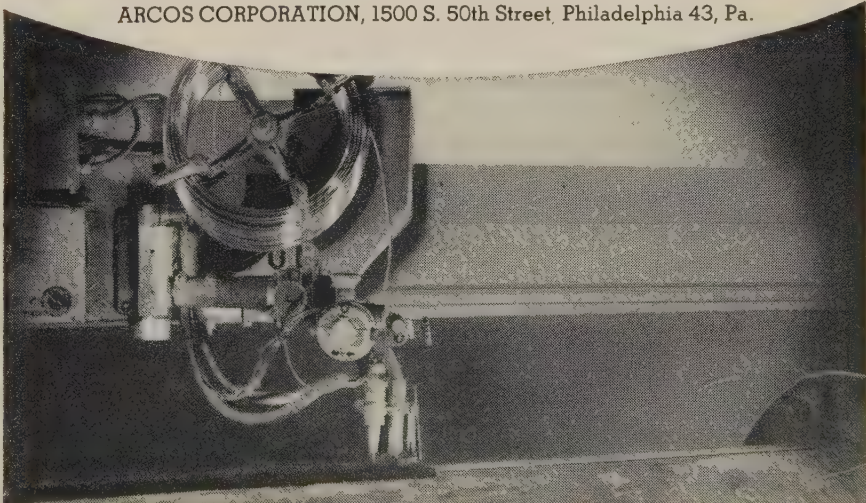
*Job Report Courtesy of
Combustion Engineering, Inc., builder of vessel shown*

USE ARCOSITE FLUX



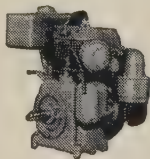
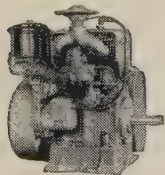
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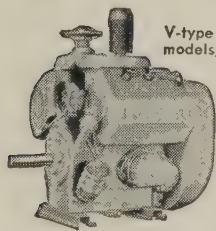
2-cylinder models
10 to 18 hp.



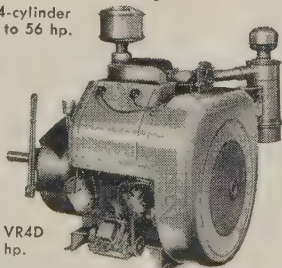
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R. bars	\$ 6.66
R. bar shapes	7.08
ates	7.68
andard structural	
shapes	7.03
R. strip	8.62
old finished bars	8.96
gh Strength Steels	100 lb.
or-Ten	
Plates	\$ 8.12
Std. structural shapes	8.23
C. B. sections	8.23
H. R. sheets	7.77
C. R. sheets	9.46
H. R. bars & bar shapes	8.41
Galv. sheets	10.21
H. R. strip	7.86
an-Ten "R"	
Plates	6.89
Std. structural shapes	7.01
C. B. sections	7.01
H. R. bars & bar shapes	7.16
H. R. sheets	6.79
H. R. strip	6.60
brasion resisting steel	
Plates	7.24
H. R. bars	7.66
H. R. sheets	7.26
H. R. strip	7.15

g Iron . . .

Pig Iron Prices, Page 198

With foundry operations spotty, there is no urgency in pig iron buying. Most users are placing their needs on a hand-to-mouth basis, confident that iron will be available when needed.

Some foundries are operating at less than five days a week and are going for larger orders in September. Foundries producing large castings for railroad equipment holders continue as one of the brighter spots in the picture. Those pouring castings for the machine tool industry are less active. In the New England district, the large textile mill equipment shops are operating well below capacity, although several are bidding for tonnages from nonintegrated producers. Inventories are low; shipments approximate the melt. Shenango Furnace Co. has shut its No. 1 blast furnace at Warfordsburg, Pa., while it rebuilds its pigging machine and repairs other auxiliary equipment. The other furnace at the plant continues in operation.



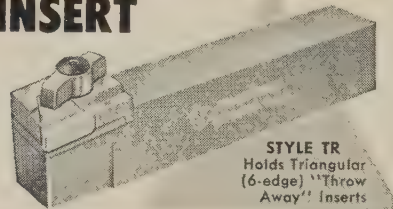
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ARMSTRONG

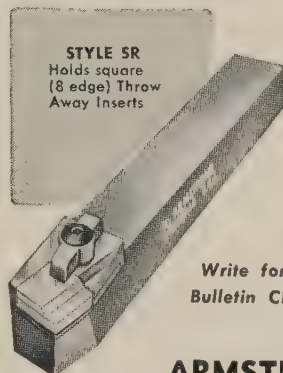
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STYLE TR
Holds Triangular
(6-edge) "Throw
Away" Inserts



STYLE SR
Holds square
(8 edge) Throw
Away Inserts

Write for
Bulletin CIT

NEW ARMSTRONG Armide Carbide Insert Tool Holders hold multiedged, throw away Armide inserts. They end tool grinding and reduce down time. After an edge dulls, a slight turn of the clamping screw permits rapid indexing of the insert to a new cutting edge. Triangular inserts have 6 cutting edges; square inserts have 8 edges. They are available in three grades—Armide 350, 370, or 883.

ARMSTRONG Armide Carbide Insert Tool Holders are furnished either "Right Hand" or "Left Hand" in the two styles illustrated, each in 3 sizes.

ARMSTRONG BROS. TOOL CO.

"The Tool Holder People"

5279 W. ARMSTRONG AVE. • CHICAGO 30, ILL.





STOP FUMES at their source

You'll find Ruemelin Fume Collectors ideal for stopping noxious welding fumes at their source. Counter-balanced inlet hood stays in working area, automatically. Improves working conditions . . . lessens fatigue . . . paves the way for increased plant production. Thousands in everyday service. Write for Fume Collector Bulletin No. 37E.

(Left) "Illustrating the 15 ft. reach collector. Handles large or small work. Units available with 9 ft., 15 ft., 17 ft. and 20 ft. reach."

RUEMELIN MFG. CO.

MFRS. & ENGRS. • SAND BLAST & DUST COLLECTING EQUIPMENT
3882 NORTH PALMER STREET • MILWAUKEE 12, WISCONSIN, U. S. A.

A 8409-14 1

Republic Steel Corp. will soon blow out a furnace at its Youngstown plant for relining. The firm is shipping hot metal to its Warren (Ohio) Works while the Warren blast furnace is undergoing a relining job.

The Philadelphia delivered price on pig iron from Swedeland, Pa., increased 13 cents a ton due to the advance in freight rates on Aug. 26. The rates also boosted the Philadelphia delivered price on low phos iron from Troy, N. Y., by 51 cents.

Iron Ore . . .

Iron Ore Prices, Page 199

Shipments of iron ore to lower Great Lakes ports increased to a daily average of 431,349 tons during the week ended Aug. 26. The figure in the preceding week was 421,152 tons, reports the American Iron Ore Association, Cleveland. Shipments from U. S. and Canadian ports totaled 3,019,443 tons in the latest period, compared with 2,948,063 tons in the week ended Aug. 19 and 2,305,387 tons in the like week a year ago.

Cumulative shipments through the week ended Aug. 26 were 55,422,606 tons, an increase of 15,295,679 tons over the total for the like period a year ago.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2200 tons, plant addition, Western Electric Co., Inc., North Andover, Mass., to Bethlehem Fabricators, Inc., Bethlehem, Pa., direct by owner.
1000 tons or more, Ringling Causeway bridge, Sarasota Bay, Florida, to Nashville Bridge Co., Nashville, Tenn.; Hardaway Construction Co., Columbus, Ga., general contractor; reinforcing, Florida Steel Co., Tampa, Fla.
860 tons, 8-span WF beam bridge, East Peoria, Ill., to Illinois Steel Bridge Co., Jasksonville, Ill.
500 tons or more, mens' intramural building, Michigan State University, Lansing, Mich., to R. C. Mahon Co., Detroit; Granger Bros. Inc., Lansing, Mich., general contractor; reinforcing, Capitol Steel Div., Lansing.
450 tons, grade separation, U. S. Route 460, near Belleville, Ill., to Bethlehem Steel Co., Bethlehem, Pa.
220 tons, grade separation and bridge over Dupage River, near Joliet, Ill., to Vierling Steel Works, Chicago.
120 tons, galvanized transmission towers for Bonneville Power Administration, to Bethlehem Pacific Coast Steel Corp., Seattle.

STRUCTURAL STEEL PENDING

1118 tons, state bridge work, Erie County, Pennsylvania; bids Sept. 13.
1100 tons, state bridge work, Lehigh County, Pennsylvania; James D. Morrissey Inc., Philadelphia, low on general contract.
1000 tons, six highway bridges, Southeast

Expressway, Braintree-Weymouth, Mass.
700 tons, storage warehouse for shapes and plates for California Bag Co.'s Steel Dr. Portland, Oreg.; Teeple & Thatcher, Portland, low \$292,000 for general contract.
Joseph M. Fought Co., Portland, low \$164,400 for structural steel.
675 tons, Nisqually River bridge, Rainier National Park, Washington State; Carl Halvorson Inc., Portland, Oreg., low.
Bureau of Public Roads, \$1,243,280, prestressed concrete; alternative, \$1,164,100, plate girder.
500 tons, classroom addition, Montana State College, Bozeman, Mont.; Crown Iron Works, St. Paul, reported low.
403 tons, state bridge work, Allegheny County, Pennsylvania; bids Sept. 13.
300 tons, 527-ft steel truss span, Siskiyou River, Oregon; bids to Bureau of Public Roads, Portland, Oreg., Sept. 5.
117 tons, state bridge work, Lehigh County, Pennsylvania; Glasgow Inc., Glenside, Pa., low on general contract.

REINFORCING BARS . . .

REINFORCING BARS PLACED

580 tons, substructure, Connecticut River bridge, Greater Hartford Bridge Authority, Wethersfield-Glastonbury, Conn., to Plattations Steel Co., Providence, R. I.; Brilli Construction Co., Southington, Conn., general contractor.

REINFORCING BARS PENDING

2500 tons, Flaming Gorge dam and power plant, Utah-Wyoming, Green Division, Colorado River Storage project; bids 1957, in year, Bureau of Reclamation, Denver, also installing 625 tons, penstocks, outlets; 1500 tons, gates, hoists, and miscellaneous metalwork.
650 tons, including 345 tons, highway reinforcement, highway and bridge structures, Plates Borough, Erie County, Pennsylvania; bids Sept. 13, Harrisburg, Pa., also 100 tons, structural steel.
390 tons, Washington State highway project, Pierce, Kittitas, Whatcom, Grant, Douglas counties; bids to Olympia, Sept. 13.
225 tons, also 175 tons shapes, Washington State Skagit River bridge; bids to Olympia, Sept. 10.
155 tons, including 90 tons highway reinforcement, highway and bridge structures, Heidelberg Borough, Pa.; bids Sept. 13, Harrisburg, Pa.; also 405 tons, structural steel.
140 tons, also 100 tons shapes, Garfield Street underpass, Seattle; MacRae Bros., Seattle, low \$538,482 for precast concrete beams; \$540,694 for pretensioned; \$540,694 for combination.

PLATES . . .

PLATES PLACED

1500 tons, 14,000 ft of 42 and 48-in. wa supply pipe, to Beall Pipe & Tank Co., Portland, Oreg., by Everett, Wash.
1200 tons, general stores supply office, Navy, Philadelphia, to Colorado Fuel Iron Corp., Wilmington, Del.; two contracts.
150 tons, 500,000-gal. elevated water tank, Vandalia, Ohio, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

PLATES PENDING

10,000 tons, four single screw cargo vessels, American Export Lines, New York; bids Oct. 30, Federal Maritime Board, Washington.
500 tons, 1540 ft of 72 and 108-in. pipe, Cougar Dam project, Lane County, Oregon; bids to U. S. Engineer, Portland, Oreg., Sept. 12.
100 tons or more, treatment plant, West Linn, Oreg.; bids Sept. 18.

PIPE . . .

CAST IRON PIPE PENDING

200 tons, 12 and 16 in. for E. 125th Street extension, Seattle; Thorburn & Logan, Seattle, low \$92,652 for general contract.

Imported Steel

Prices per 100 lbs. (except where otherwise noted) landed, including customs duty, but no other taxes.

	Atlantic & Gulf Coast	West Coast	Vancouver	Montreal
Deformed Bars (¾" Dia. incl. all extras) . . .	\$6.78	\$7.01	\$6.76	\$6.44
Merchant Bars (¾" Round incl. all extras) . . .	7.62	7.85	7.48	7.22
Bands (1"x½"x20' incl. all extras)	7.76	7.98	7.65	7.38
Angles (2"x2"x½" incl. all extras)	6.57	6.75	6.99	6.69
Beams & Channels (base)	6.82	7.00	7.24	6.94
Furring Channels (C.R. ¾", per 1000'	26.62	27.77	....	....
Barbed Wire (per 82 lb. net reel)	6.95	7.40	7.75	7.80
Nails (bright, common, 20d and heavier) . . .	8.38	8.58	9.07	8.99
Larsen Sheet Piling (section II, new, incl. size extra)	7.80	8.10	8.10	7.80
Wire, Manufacturer's, bright, low C, (11½ ga.) .	7.38	7.52	8.52	8.52
Wire, galvanized, low C, (11½ ga.)	8.01	8.15	9.42	9.42
Wire, Merchant quality, bl. ann., (10 ga.) . . .	7.60	7.75	8.78	8.78
Rope Wire (.045", 247,000 PSI, incl. extras) . .	13.60	13.75	13.00	13.00
Wire, fine and weaving, low C, (20 ga.)	10.66	10.80	10.17	12.17
Tie Wire, autom. baler (14G, 97 lbs. net) . . .	9.58	9.73	9.64	9.54
Merchant Pipe (½" galv. T & C, per 100'	8.48	8.83	....	....
Casing (5½", 15.5 J55, T & C, per 100'	194.00	199.00	....	....
Tubing (2½", 6.4 J55, EUE, per 100'	103.00	104.00	....	....
Forged R. Turn. Bars, C-1035 (from 10" di.) .	14.00	14.23	14.00	13.74

Ask prices on: Bulb tees, bolts and nuts, manganese steel plates and shapes, welded wire reinforcing mesh and hardware cloth, boiler tubes, A-335-P11 pressure pipe.

from prominent century-old West German Mills

Through Stahlunion-Export GmbH

BOCHUMER VEREIN World's first Steel Foundry, 1842—Vacuum degassed Forgings. Pinion wire and spring wire for watches and clocks.
DORTMUNDER UNION Originators of Interlock Sheet Piling—Larsen Sheet Piling, Plate, Shapes, Forged Bars and Shafts.
NIEDERRHEIN Europe's most modern Rod Mill—OH, CH, Low Metalloid, Specialty

Wire Rod, Merchant Bars.
WESTFAELISCHE UNION Europe's largest Wire Mill—All types drawn Wire and Wire Products—Nails, Barwire, Wire Rope, Prestress Concrete Wire and Strand.
PHOENIX RHEINROHR Europe's largest Pipe Mill—Pipe, Tubing, Flanges, Welding Fittings, Precision Tubes, Tubular Masts.

delivered on Domestic Terms

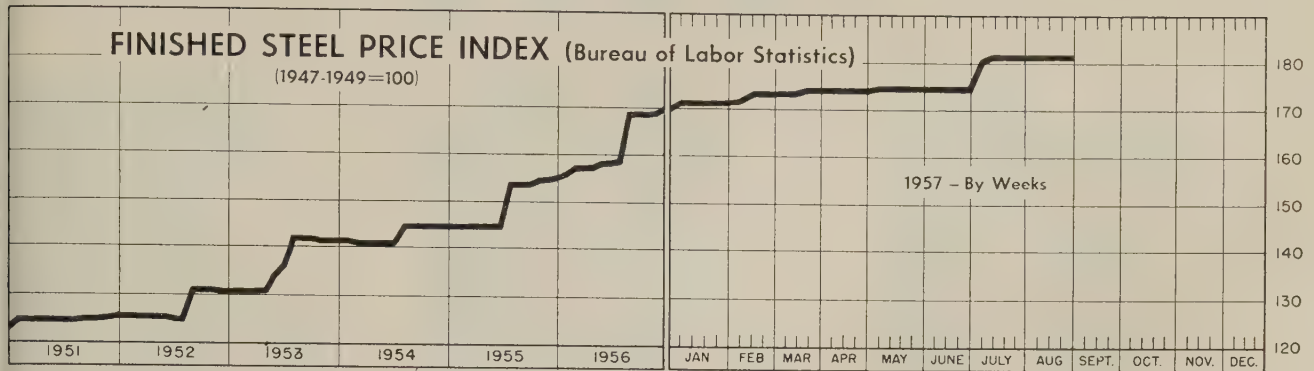
No red tape! We deliver to any place in North America. Over 10 years of service to more than 2000 North American accounts—as a domestic firm, on domestic terms—with lower costs or better deliveries. Write for "How to be at home with products made abroad" and the address of your local KOC representative.

KURT ORBAN COMPANY, INC., 46 Exchange Place, Jersey City 2, N. J.
In Canada: Kurt Orban Canada, Ltd., Vancouver, Toronto, Montreal

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

(1947-1949=100)



Aug. 27, 1957

Week Ago

Month Ago

Aug. Avg.

Year Ago

181.5

181.5

181.5

181.5

168.6

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Aug. 27

Prices include mill base prices and typical extras and deductions. Units are per 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Standard, No. 1...	\$5.600	Bars, Reinforcing	6.210
Standard, 40 lb	7.067	Bars, C.F., Carbon	10.360
Plates	6.600	Bars, C.F., Alloy	13.875
Standard, Railway	9.825	Bars, C.F., Stainless, 302	
Standard, Freight Car, 33		(lb)	0.553
(per wheel)	60.000	Sheets, H.R., Carbon	6.192
Standard, Carbon	6.150	Sheets, C.R., Carbon	7.089
Standard, Shapes	5.942	Sheets, Galvanized	8.220
Standard, Tool Steel, Carbon		Sheets, C.R., Stainless, 302	
(lb)	0.480	(lb)	0.688
Standard, Tool Steel, Alloy, Oil		Sheets, Electrical	12.025
Hardening Die (lb)	0.585	Strip, C.R., Carbon	9.193
Standard, Tool Steel, H.R.,		Strip, C.R., Stainless, 430	
Alloy, High Speed, W		(lb)	0.493
75, Cr 4.5, V 2.1, Mo		Strip, H.R., Carbon	6.245
5, C 0.60 (lb)	1.274	Pipe, Black, Butt-weld (100	
Standard, Tool Steel, H.R.,		ft)	19.814
Alloy, High Speed, W18,		Pipe, Galv., Butt-weld (100	
Cr 4, V 1 (lb)	1.769	ft)	23.264
Standard, H.R., Alloy	10.525	Pipe, Line (100 ft)	199.023
Standard, H.R., Stainless, 303		Casing, Oil Well, Carbon	
(lb)	0.525	(100 ft)	194.499
Standard, H.R., Carbon	6.425	Casing, Oil Well, Alloy	
		(100 ft)	304.610

Tubes, Boiler (100 ft) ..	49.130	Black Plate, Canmaking	
Tubing, Mechanical, Carbon		Quality (95 lb base box)	7.583
(100 ft)	24.953	Wire, Drawn, Carbon ...	10.225
Tubing, Mechanical, Stainless,		Wire, Drawn, Stainless,	
304 (100 ft)	205.608	430 (lb)	0.653
Tin Plate, Hot-dipped, 1.25		Bale Ties (bundles)	7.967
lb (95 lb base box)....	9.783	Nails, Wire, 8d Common.	9.828
Tin Plate, Electrolytic		Wire, Barbed (80-rod spool)	8.719
0.25 lb (95 lb base box)	8.483	Woven Wire Fence (20-rod	
		roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Aug. 28	Week	Month	Year	5 Yr
	1957	Ago	Ago	Ago	Ago
Index (1935-39 avg=100)...	239.15	239.15	239.15	225.71	181.40
Index in cents per lb	6.479	6.479	6.479	6.114	4.914

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT	\$146.19	\$146.19	\$146.19	\$137.75	\$113.23
No. 2 Fdry Pig Iron, GT...	66.49	66.49	66.49	62.63	52.54
Basic Pig Iron, GT	65.99	65.99	65.99	62.18	52.16
Malleable Pig Iron, GT ...	67.27	67.27	67.27	63.41	53.27
Steelmaking Scrap, GT....	52.17	53.50	54.50	58.83	43.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Aug. 28	Week	Month	Year	5 Yr
	1957	Ago	Ago	Ago	Ago
Standard, H.R., Pittsburgh	5.425	5.425	5.425	5.075	3.95
Standard, H.R., Chicago	5.425	5.425	5.425	5.075	3.95
Standard, H.R., deld., Philadelphia	5.725	5.715	5.715	4.93	4.502
Standard, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	4.925
Standard, Std., Pittsburgh	5.275	5.275	5.275	5.00	3.85
Standard, Std., Chicago	5.275	5.275	5.275	5.00	3.85
Standard, deld., Philadelphia...	5.545	5.525	5.525	5.00	4.13
Standard, Pittsburgh	5.10	5.10	5.10	4.85	3.90
Standard, Chicago	5.10	5.10	5.10	4.85	3.90
Standard, Coatesville, Pa.	5.50	5.50	5.50	5.25	4.35
Standard, Sparrows Point, Md.	5.10	5.10	5.10	4.85	3.90
Standard, Claymont, Del.	5.70	5.70	5.70	5.35	4.35
Standard, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.775
Standard, H.R., Chicago	4.925	4.925	4.925	4.675	3.775
Standard, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.575
Standard, C.R., Chicago	6.05	6.05	6.05	5.75	4.575
Standard, C.R., Detroit	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775
Standard, Galv., Pittsburgh ..	6.60	6.60	6.60	6.30	5.075
Standard, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.75-4.00
Standard, H.R., Chicago	4.925	4.925	4.925	4.675	3.725
Standard, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80
Standard, C.R., Chicago	7.15	7.15	7.15	6.85	5.35
Standard, C.R., Detroit	7.25	7.25	7.25	6.95	5.30-5.60
Standard, Basic, Pittsburgh	7.65	7.65	7.65	7.20	4.85-5.225
Standard, Wire, Pittsburgh	8.95	8.95	8.95	8.35	5.90-6.35
Standard, Plate (1.50 lb) box, Pitts.	\$10.30	\$10.30	\$10.30	\$9.85	\$8.95

including 0.35c for special quality.

FINISHED STEEL

Standard, forging, Pitts. (NT) \$96.00	\$96.00	\$96.00	\$91.50	\$70.50
Standard, rods, 3/8-5/8" Pitts. ...	6.15	6.15	6.15	5.80

PIG IRON, Gross Ton

	Aug. 28	Week	Month	Year	5 Yr
	1957	Ago	Ago	Ago	Ago
Bessemer, Pitts.	\$67.00	\$67.00	\$67.00	\$63.50	\$53.00
Basic, Valley	66.00	66.00	66.00	62.50	52.00
Basic, deld., Phila.	70.01	69.88	69.88	66.26	56.75
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	63.00	52.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	63.00	52.50
No. 2 Fdry, deld., Phila. .	70.51	70.38	70.38	66.76	57.25
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	48.88
No. 2 Fdry(Birm.)deld. Cin.	70.20	70.20	70.20	66.70	56.43
Malleable, Valley	66.50	66.50	66.50	63.00	52.50
Malleable, Chicago	66.50	66.50	66.50	63.00	52.50
Ferromanganese, Duquesne.	255.00†	255.00†	255.00†	215.00†	228.00*

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	\$54.50	\$55.50	\$56.50	\$58.50	\$44.00
No. 1 Heavy Melt, E. Pa...	51.00	52.00	53.00	59.00	41.50
No. 1 Heavy Melt, Chicago.	51.00	53.00	54.00	59.00	42.50
No. 1 Heavy Melt, Valley...	54.50	55.50	55.50	64.50	44.00
No. 1 Heavy Melt, Cleve. ..	51.50	52.50	52.50	62.00	43.00
No. 1 Heavy Melt, Buffalo.	49.50	49.50	46.50	56.50	43.00
Rails, Re-rolling, Chicago ..	71.50	74.50	79.50	84.50	52.50
No. 1 Cast, Chicago	45.50	46.50	47.50	53.50	50.00

COKE, Net Ton

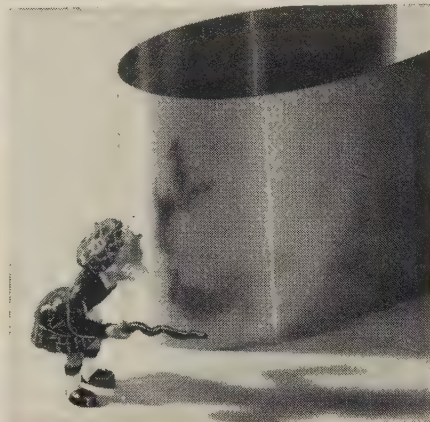
Beehive, Furn., Connlsvl. ..	\$15.25	\$15.25	\$15.25	\$14.50	\$14.75
Beehive, Fdry., Connlsvl. ..	18.25	18.25	18.25	17.50	17.00

No matter which **FINISH** you like—you can buy it in

MicroRoll® QUALITY STAINLESS STEEL



2D—A silvery white, but non-lustrous, surface produced by annealing and pickling cold reduced material. Steel sheets & strip in this condition are most ductile and the surface holds lubricant well for severe drawing operations.



2B—Steel in the 2D condition which is subsequently rolled on a "skin pass" or temper mill. The surface acquires a bright finish from the polished rolls. This surface is somewhat more dense and hard than 2D and is a better starting surface for later finishing and buffing operations.



No. 3—This surface is made by grinding with a No. 100 abrasive. This surface is smooth but not as reflective as 2B.



No. 4—A finer finish than No. 3 made by grinding with a No. 150 abrasive. Like No. 3, this surface is easily blended with hand grinders after forming, drawing or welding.



No. 7—Good reflectivity and brilliance made by polishing with a No. 400 abrasive. This semi-mirror finish must be protected during fabrication by adhesive paper or strippable plastics lest the finish be marred beyond repair.



BRIGHT—A highly reflective surface made by cold reducing with highly polished, glass-hard rolls. This finish is only available in Type 430 stainless.

These are our standard surface finishes that are available in types 201, 202, 301, 302, 304 and 430 except Bright which is type 430 exclusively.

These finishes are regularly supplied in sheet and coil form in widths up to 48 inches.

Since Nos. 3, 4, 7 and 430 Bright are smooth reflective surfaces, they are not recommended for severe drawing without special precautions as the mill finish may be marred. Applications such as dairy machinery, kitchen and restaurant equipment and architectural decorative work require only local forming, so these highly polished surfaces are not greatly disturbed. All mill polished sheets are carefully packed to avoid handling imperfections. Protective adhesive paper can be specified by the buyer when needed.

For specific information on recommended surface characteristics for a particular stainless steel sheet and strip application, address your request to our Product Development Dept.



Washington Steel Corporation

Producers of Stainless Sheet and Strip Exclusively

9-0 WOODLAND AVENUE, WASHINGTON, PA.

Steel Prices

Mill prices as reported to STEEL, Aug. 28, cents per pound except as otherwise noted. *Changes shown in italics.*
Code numbers following mill points indicate producing company. Key to producers, page 194; to footnotes, page 196.

SEMI-FINISHED

OTS, Carbon, Forging (NT)	
Munhall, Pa. U5	.....\$73.50
OTS, Alloy (NT)	
Greentown S41	.....\$77.00
Greentown S3	.....\$77.00
Greentown S3	.....\$77.00
Greentown S3	.....\$77.00
Greentown S3	.....\$77.00
Greentown S3	.....\$77.00

PLATES, BLOOMS & SLABS

Carbon, Re-rolling (NT)	
Bessemer, Pa. U5	.....\$77.50
Bridgeport, Conn. N19	.....\$80.50
Buffalo R2	.....\$77.50
Clairton, Pa. U5	.....\$77.50
Greentown T2	.....\$77.50
Greentown T2	.....\$77.50
Greentown T2	.....\$77.50
Greentown T2	.....\$77.50
Greentown T2	.....\$77.50
Greentown T2	.....\$77.50

Carbon, Forging (NT)

Bessemer, Pa. U5	.....\$96.00
Bridgeport, Conn. N19	.....\$101.00
Buffalo R2	.....\$96.00
Clairton, Pa. U5	.....\$96.00
Greentown T2	.....\$96.00
Greentown T2	.....\$96.00
Greentown T2	.....\$96.00
Greentown T2	.....\$96.00
Greentown T2	.....\$96.00
Greentown T2	.....\$96.00
Greentown T2	.....\$96.00

Alloy, Forging (NT)

Bessemer, Pa. B2	.....\$114.00
Bridgeport, Conn. N19	.....\$114.00
Buffalo R2	.....\$114.00
Clairton, Pa. U5	.....\$114.00
Greentown T2	.....\$114.00
Greentown T2	.....\$114.00
Greentown T2	.....\$114.00
Greentown T2	.....\$114.00
Greentown T2	.....\$114.00
Greentown T2	.....\$114.00
Greentown T2	.....\$114.00

SEAMLESS TUBE (NT)

Bridgeport, Conn. N19	.....\$122.50
Buffalo R2	.....\$117.50
Clairton, Pa. U5\$117.50
Greentown T2\$117.50
Greentown T2\$117.50
Greentown T2\$117.50
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Greentown T2\$117.50
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Greentown T2\$117.50

SEAMLESS TUBE (NT)

Bridgeport, Conn. N19\$122.50
Buffalo R2\$117.50
Clairton, Pa. U5\$117.50
Greentown T2\$117.50
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SEAMLESS TUBE (NT)

Bridgeport, Conn. N19\$122.50
Buffalo R2\$117.50
Clairton, Pa. U5\$117.50
Greentown T2\$117.50
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Greentown T2\$117.50
Greentown T2\$117.50
Greentown T2\$117.50

Monessen, Pa. P17\$6.15
N.Tonawanda, N.Y. B11	.....\$6.15
Pittsburgh, Calif. C11	.....\$6.95
Portsmouth, O. P12	.....\$6.15
Roebbing, Ill. R5	.....\$6.25
S.Chicago, N.J. R2	.....\$6.15
SparrowsPoint, Md. B2	.....\$6.25
Sterling, Ill. (1) N15	.....\$6.15
Sterling, Ill. N15	.....\$6.25
Struthers, O. Y1	.....\$6.15
Worcester, Mass. A7	.....\$6.45

STRUCTURALS

Carbon Steel Std. Shapes

Ala. City, Ala. R2	.....\$5.275
Atlanta A11	.....\$5.475
Alquippa, Pa. J5	.....\$5.275
Bessemer, Ala. T2	.....\$5.275
Bethlehem, Pa. B2	.....\$5.325
Birmingham C15	.....\$5.275
Clairton, Pa. U5	.....\$5.275
Fairfield, Ala. T2	.....\$5.275
Fontana, Calif. K1	.....\$6.075
Gary, Ind. U5	.....\$5.275
Geneva, Utah C11	.....\$5.275
Houston S5	.....\$5.375
Ind. Harbor, Ind. I-2	.....\$5.275
Johnstown, Pa. B2	.....\$5.325
Joliet, Ill. P22	.....\$5.275
Kansas City, Mo. S5	.....\$5.375
Lackawanna, N.Y. B2	.....\$5.325
Los Angeles B3	.....\$5.975
Minnequa, Colo. C10	.....\$5.975
Munhall, Pa. U5	.....\$5.275
Niles, Calif. P1	.....\$5.925
Phoenixville, Pa. P4	.....\$5.50
Portland, Ore. O4	.....\$6.025
Seattle B3	.....\$6.025
S.Chicago, Ill. U5	.....\$5.275
S.San Francisco B3	.....\$5.925
Sterling, Ill. N15	.....\$5.275
Torrance, Calif. C11	.....\$5.975
Weirton, W. Va. W6	.....\$5.275

Wide Flange

Bethlehem, Pa. B2	.....\$5.325
Clairton, Pa. U5	.....\$5.275
Fontana, Calif. K1	.....\$6.225
Indiana Harbor, Ind. I-2	.....\$5.525
Lackawanna, N.Y. B2	.....\$5.325
Munhall, Pa. U5	.....\$5.275
Phoenixville, Pa. P4	.....\$5.50
S.Chicago, Ill. U5	.....\$5.275

Alloy Std. Shapes

Alquippa, Pa. J5	.....\$6.55
Clairton, Pa. U5	.....\$6.55
Gary, Ind. U5	.....\$6.55
Houston S5	.....\$6.65
Kansas City, Mo. S5	.....\$6.65
Munhall, Pa. U5	.....\$6.55
S.Chicago, Ill. U5	.....\$6.55

H.S., L.A. Std. Shapes

Alquippa, Pa. J5	.....\$7.75
Bessemer, Ala. T2	.....\$7.75
Bethlehem, Pa. B2	.....\$7.80
Clairton, Pa. U5	.....\$7.75
Fairfield, Ala. T2	.....\$7.75
Fontana, Calif. K1	.....\$8.55
Gary, Ind. U5	.....\$7.75
Geneva, Utah C11	.....\$7.75
Houston S5	.....\$7.85
Ind. Harbor, Ind. I-2	.....\$7.75
Johnstown, Pa. B2	.....\$7.80
Kansas City, Mo. S5	.....\$7.85
Lackawanna, N.Y. B2	.....\$7.80
Los Angeles B3	.....\$8.45
Munhall, Pa. U5	.....\$7.75
Seattle B3	.....\$8.50
S.Chicago, Ill. U5	.....\$7.75
S.San Francisco B3	.....\$8.40
Struthers, O. Y1	.....\$7.75

H.S., L.A. Wide Flange

Bethlehem, Pa. B2	.....\$7.80
Lackawanna, N.Y. B2	.....\$7.80
Munhall, Pa. U5	.....\$7.75
S.Chicago, Ill. U5	.....\$7.75

PILING

BEARING PILES

Bethlehem, Pa. B2	.....\$5.325
Lackawanna, N.Y. B2	.....\$5.325
Munhall, Pa. U5	.....\$5.275
S.Chicago, Ill. U5	.....\$5.275

STEEL SHEET PILING

Lackawanna, N.Y. B2	.....\$6.225
Munhall, Pa. U5	.....\$6.225
S.Chicago, Ill. U5	.....\$6.225

PLATES

PLATES, Carbon Steel

Ala. City, Ala. R2	.....\$5.10
Alquippa, Pa. J5	.....\$5.10
Ashland, Ky. (15) A10	.....\$5.10
Bessemer, Ala. T2	.....\$5.10
Clairton, Pa. U5	.....\$5.10
Claymont, Del. C22	.....\$5.70
Cleveland J5	.....\$5.20

Coatesville, Pa. L7	.....\$5.50
Conshohocken, Pa. A3	.....\$5.20
Ecorse, Mich. G5	.....\$5.20
Fairfield, Ala. T2	.....\$5.10
Fontana, Calif. (30) K1	.....\$5.90
Gary, Ind. U5	.....\$5.10
Geneva, Utah C11	.....\$5.10
Granite City, Ill. G4	.....\$5.30
Harrisburg, Pa. P4	.....\$5.80
Houston S5	.....\$5.20
Ind. Harbor, Ind. I-2	.....\$5.10
Johnstown, Pa. B2	.....\$5.10
Lackawanna, N.Y. B2	.....\$5.10
LoneStar, Tex. L6	.....\$5.45
Mansfield, O. E6	.....\$5.10
Minnequa, Colo. C10	.....\$5.95
Munhall, Pa. U5	.....\$5.10
Newport, Ky. A2	.....\$5.10
Pittsburgh J5	.....\$5.10
Riverdale, Ill. A1	.....\$5.10
Seattle B3	.....\$6.00
Sharon, Pa. S3	.....\$5.10
S.Chicago, Ill. U5	.....\$5.10
SparrowsPoint, Md. B2	.....\$5.10
Sterling, Ill. N15	.....\$5.10
Steubenville, O. W10	.....\$5.10
Warren, O. R2	.....\$5.10
Youngstown R2, U5, Y1	.....\$5.10

PLATES, Carbon Abras. Resist.

Claymont, Del. C22	.....\$7.35
Fontana, Calif. K1	.....\$7.55
Geneva, Utah C11	.....\$6.75
Johnstown, Pa. B2\$7.00
SparrowsPoint, Md. B2\$7.00

PLATES, Wrought Iron

Economy, Pa. B14\$13.15
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PLATES, H.S., L.A.

Alquippa, Pa. J5\$7.625
Bessemer, Ala. T2\$7.625
Bridgeport, Conn. N19\$7.625
Buffalo R2	.....\$7.625
Canton, O. R2, T7	.....\$7.625
Clairton, Pa. U5	.....\$7.625
Cleveland J5, R2	.....\$7.625
Coatesville, Pa. L7	.....\$7.925
Conshohocken, Pa. A3	.....\$7.625
Ecorse, Mich. G5	.....\$7.725
Fairfield, Ala. T2	.....\$7.625
Farrell, Pa. S3	.....\$7.625
Fontana, Calif. (30) K1	.....\$8.425
Gary, Ind. U5	.....\$7.625
Geneva, Utah C11	.....\$7.625
Houston S5	.....\$7.725
Ind. Harbor, Ind. I-2	.....\$7.625
Johnstown, Pa. B2	.....\$7.625
Lackawanna, N.Y. B2	.....\$7.625
Munhall, Pa. U5	.....\$7.625
Pittsburgh J5	.....\$7.625
Seattle B3	.....\$8.525
Sharon, Pa. S3	.....\$7.625
S.Chicago, Ill. U5	.....\$7.625
SparrowsPoint, Md. B2	.....\$7.625
Warren, O. R2	.....\$7.625
Youngstown U5	.....\$7.625

PLATES, Alloy

Alquippa, Pa. J5	.....\$7.20
Claymont, Del. C22	.....\$7.20
Coatesville, Pa. L7	.....\$7.20
Farrell, Pa. S3	.....\$8.00
Fontana, Calif. (30) K1	.....\$8.20
Gary, Ind. U5	.....\$7.20
Houston S5	.....\$7.30
Ind. Harbor, Ind. Y1	.....\$7.20
Johnstown, Pa. B2	.....\$7.20
Lowellville, O. S3	.....\$7.20
Munhall, Pa. U5	.....\$7.20
Newport, Ky. A2	.....\$7.20
Pittsburgh J5	.....\$7.20
Seattle B3	.....\$8.10
Sharon, Pa. S3	.....\$7.20
S.Chicago, Ill. U5	.....\$7.20
SparrowsPoint, Md. B2	.....\$7.20
Youngstown Y1	.....\$7.20

FLOOR PLATES

Cleveland J5	.....\$6.175
Conshohocken, Pa. A3	.....\$6.175
Ind. Harbor, Ind. I-2	.....\$6.175
Munhall, Pa. U5	.....\$6.175
S.Chicago, Ill. U5	.....\$6.175

PLATES, Ingot Iron

Ashland c.l. (15) A10	.....\$5.35
Ashland l.c.l. (15) A10	.....\$5.85
Cleveland c.l. R2	.....\$5.85
Warren, O. c.l. R2	.....\$5.85

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)

Ala. City, Ala. (9) R2	.....\$5.425
Alquippa, Pa. (9) J5	.....\$5.425
Alton, Ill. L1	.....\$5.625
Atlanta (9) A11	.....\$5.625
Bessemer, Ala. (9) T2	.....\$5.425
Birmingham (9) C15	.....\$5.425
Bridgeport, Conn. (9) N19	.....\$5.65
Buffalo (9) R2	.....\$5.425

BARS, Hot-Rolled Alloy

Alquippa, Pa. (9) U5	.....\$5.425
Cleveland (9) R2	.....\$5.425
Ecorse, Mich. (9) G5	.....\$5.425
Emeryville, Calif. (9) J7	.....\$6.175
Fairfield, Ala. (9) T2	.....\$5.425
Fairless, Pa. (9) U5	.....\$5.575
Fontana, Calif. (9) K1	.....\$6.125
Gary, Ind. (9) U5	.....\$5.425
Houston (9) S5	.....\$5.675
Ind. Harbor (9) I-2	.....\$5.425
Johnstown, Pa. (9) B2	.....\$5.425
Joliet, Ill. (9) P22	.....\$5.425
Kansas City, Mo. (9) S5	.....\$5.675
Lackawanna (9) B2	.....\$5.425
Los Angeles (9) B3	.....\$5.975
Minnequa, Colo. (9) C10	.....\$5.975
Munhall, Pa. (9) U5	.....\$5.425
Niles, Calif. (9) P1	.....\$6.125
Pittsburgh (9) J5	.....\$5.425
Portland, Ore. (9) O4	.....\$6.175
San Francisco (9) S7	.....\$6.275
Seattle (9) B3\$6.175

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland, Md. (5) C19\$6.55
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BARS, Cold-Finished Alloy

Ambridge, Pa. W18\$8.775
Beaver Falls, Pa. M12, R2\$8.775
Bethlehem, Pa. B2\$8.925
Bridgeport, Conn. N19	.....\$8.925
Buffalo B5	.....\$8.775
Camden, N.J. P13	.....\$8.95
Canton, O. T7	.....\$8.775
Carnegie, Pa. C12	.....\$8.775
Chicago W18	.....\$8.775
Cleveland A7, C20	.....\$8.775
Detroit B5, P17	.....\$8.975
Detroit S41	.....\$8.775
Donora, Pa. A7	.....\$8.775
Elyria, O. W8	.....\$8.775
Franklin Park, Ill. N5	.....\$8.775
Gary, Ind. R2	.....\$8.775
Green Bay, Wis. F7	.....\$8.775
Hammond, Ind. J5, L2	.....\$8.775
Hartford, Conn. R2	.....\$9.075
Harvey, Ill. B5	.....\$8.775
Lackawanna, N.Y. B2	.....\$8.775
Los Angeles P2, S30	.....\$10.65
Mansfield, Mass. B5	.....\$9.075
Massillon, O. R2, R8	.....\$8.775
Midland, Pa. C18	.....\$8.775
Monaca, Pa. S17	.....\$8.775
Newark, N.J. W18	.....\$8.95
Plymouth, Mich. P5	.....\$8.975
Plymouth, Conn. W18	.....\$8.975
Readville, Mass. C14	.....\$8.75
S.Chicago, Ill. W14	.....\$7.30
Spring City, Pa. K3	.....\$7.75
Struthers, O. Y1	.....\$7.30
Warren, O. C17	.....\$7.30
Williamantic, Conn. J5	.....\$7.80
Waukegan, Ill. A7	.....\$7.30
Youngstown F3, Y1\$7.30

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland, Md. (5) C19\$6.55
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BARS, Cold-Finished Alloy

Ambridge, Pa. W18\$8.775
Beaver Falls, Pa. M12, R2\$8.775
Bethlehem, Pa. B2\$8.925
Bridgeport, Conn. N19	

194

STRIP

Hot-Rolled Carbon	
City, Ala. (27) R2	4.925
Port, Pa. P7	4.925
Ill. L1	5.125
nd, Ky. (8) A10	4.925
nta A11	5.125
emer, Ala. T2	4.925
ingham C15	4.925
city (27) R2	4.925
shohocken, Pa. A3	4.975
oit M1	5.025
se, Mich. G5	5.025
field, Ala. T2	4.925
ana, Calif. K1	5.825
nd Ind. U5	4.925
Harbor, Ind. I-2, Y1	4.925
stown, Pa. (25) B2	4.925
akawanna, N.Y. (25) B2	4.925
angeles (25) B3	5.675
nequa, Colo. C10	6.025
burg, Calif. C11	5.675
rdale, Ill. A1	4.925
Francisco S7	6.35
tle (25) B3	6.35
tle N14	6.35
ron, Pa. S3	4.925
in Francisco (25) B3	5.675
rowsPoint, Md. B2	4.925
ling, Ill. (1) N15	4.925
ling, Ill. N15	5.025
rance, Calif. C11	5.675
ren, O. R2	4.925
rtion, W. Va. W6	4.925
ngstown U5	4.925
Hot-Rolled Alloy	
ne, Pa. S18	8.10
rell, Pa. S3	8.10
ly, Ind. U5	8.10
oston S5	8.35
Harbor, Ind. Y1	8.10
ansasCity, Mo. S5	8.35
angeles B3	9.30
wellville, O. S3	9.30
port, Ky. A2	8.10
ron, Pa. S3	8.10
icago, Ill. W14	8.10
ngstown U5, Y1	8.10
Hot-Rolled	
High-Strength, Low-Alloy	
emer, Ala. T2	7.325
shohocken, Pa. A3	7.325
se, Mich. G5	7.425
field, Ala. T2	7.325
rell, Pa. S3	7.325
ry, Ind. U5	7.325
Harbor, Ind. I-2, Y1	7.325
akawanna, N.Y. B2	7.325
angeles (25) B3	8.075
attle (25) B3	8.325
ron, Pa. S3	7.325
Chicago, Ill. W14	7.325
San Francisco (25) B3	8.075
arrowsPoint, Md. B2	7.325
ren, O. R2	7.325
rtion, W. Va. W6	7.325
ngstown U5, Y1	7.325
Hot-Rolled Ingot Iron	
hland, Ky. (8) A10	5.175
arren, O. R2	5.675
Cold-Rolled Carbon	
nderson, Ind. G6	7.15
altimore T6	7.15
oston T6	7.70
ffalo S40	7.15
leveland A7, J5	7.15
shohocken, Pa. A3	7.20
arborn, Mich. D3	7.25
etroit D2, M1, P20	7.25
ver, O. G6	7.15
orse, Mich. G5	7.25
anston, Ill. M22	7.15
llansbee, W. Va. F4	7.15
ntana, Calif. K1	9.00
ankinPark, Ill. T6	7.25
d Harbor, Ind. Y1	7.15
ianapolis J5	7.30
angeles C1	9.20
W Bedford, Mass. R10	7.60
W Britain (10) S15	7.15
W Castle, Pa. B4, E5	7.15
W Haven, Conn. D2	7.60
W Kensington, Pa. A6	7.15
W tucket, R.I. R3	7.80
W tucket, R.I. N8	7.70
W illadelphia (45) P24	7.70
W tsburgh J5	7.15
W rde, Ill. A1	7.25
W me, N.Y. (32) R6	7.15
W ron, Pa. S3	7.15
W rton, N.J. (31) R5	8.60
W allingford, Conn. W2	7.60
W arren, O. R2, T5	7.15
W eirton, W. Va. W6	7.15
W orcester, Mass. A7	7.70
W ington J5, Y1	7.15

STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie, Pa. S18	15.05
Cleveland A7	15.25
Dover, O. G6	15.05
Farrell, Pa. S3	15.05
FranklinPark, Ill. T6	15.05
Harrison, N.J. C18	15.05
Indianapolis J5	15.20
Lowellville, O. S3	15.40
Pawtucket, R.I. N8	15.05
Riverdale, Ill. A1	15.05
Sharon, Pa. S3	15.05
Worcester, Mass. A7	15.55
Youngstown J5	15.05

STRIP, Cold-Rolled

High-Strength, Low-Alloy	
Cleveland A7	10.45
Dearborn, Mich. D3	10.60
Dover, O. G6	10.45
Ecorse, Mich. G5	10.55
Farrell, Pa. S3	10.50
Ind. Harbor, Ind. Y1	10.65
Sharon, Pa. S3	10.50
Warren, O. R2	10.45

STRIP, Cold-Finished

Spring Steel (Annealed)	
Baltimore T6	9.50
Boston T6	9.50
Bristol, Conn. W1	10.70
Carnegie, Pa. S18	8.95
Cleveland A7	8.95
Dearborn, Mich. D3	9.05
Detroit D2	9.05
Dover, O. G6	8.95
Evanston, Ill. M22	8.95
Fosteria, O. S1	10.05
FranklinPark, Ill. T6	9.05
Harrison, N.J. C18	9.10
Indianapolis J5	9.10
Los Angeles C1	11.15
New Britain, Conn. (10) S15	8.95
New Castle, Pa. B4, E5	8.95
New Haven, Conn. D2	9.40
New Kensington, Pa. A6	8.95
New York W3	10.70
Pawtucket, R.I. N8	9.50
Riverdale, Ill. A1	9.05
Rome, N.Y. (32) R6	8.95
Sharon, Pa. S3	8.95
Trenton, N.J. R5	10.70
Wallingford, Conn. W2	9.40
Warren, O. T5	8.95
Worcester, Mass. A7, T6	9.50
Youngstown J5	8.95

Spring Steel (Tempered)

Bristol, Conn. W1	18.10
Buffalo W12	18.10
Fosteria, O. S1	18.30
FranklinPark, Ill. T6	18.45
Harrison, N.J. C18	18.10
New York W3	18.10
Palmer, Mass. W12	18.10
Trenton, N.J. R5	18.10
Worcester, Mass. A7, T6	18.10
Youngstown J5	18.45

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Arma- ture	Elec- tric	Dyna- mo
BeechBottom, W. Va. W10	11.80	11.80	12.90	13.95
Mansfield, O. E6	9.625	11.10	11.80	12.90
Newport, Ky. A2	9.625	11.10	11.80	12.90
Niles, O. M21, S3	9.625	11.10	11.80	12.90
Vandergrift, Pa. U5	9.625	11.10	11.80	12.90
Warren, O. R2	9.625	11.10	11.80	12.90
Zanesville, O. A10	11.10	11.80	12.90	13.95
Zanesville, O. A10 (SP coils)	11.55	12.65	13.70	

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed 1/2c lower)	Field	Arma- ture	Elec- tric	Motor	Dyna- mo
BeechBottom, W. Va. W10	11.35	12.05	13.15	14.20	
Brackenridge, Pa. A4	12.05	13.15	14.20		
GraniteCity, Ill. G4	9.825	11.05	11.75	12.85	
Indiana Harbor, Ind. I-2	9.825	11.05	11.55	12.65	
Mansfield, O. E6	9.625	11.35	12.05	13.50	14.20
Vandergrift, Pa. U5	9.625	11.35	12.05	13.15	14.20
Warren, O. R2	9.625	11.35	12.05	13.15	14.20
Zanesville, O. A10 (EP coils)	11.35	12.05	13.15	14.20	

H.R. SHEETS (22 Ga., cut lengths)

T-72	T-65	T-58	T-52
BeechBottom, W. Va. W10	15.00	15.55	16.05
Vandergrift, Pa. U5	14.75	15.55	16.05
Zanesville, O. A10	15.00	15.55	16.05

C.R. COILS & CUT LENGTHS (22 Ga.)

T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge, Pa. A4	17.60	19.20	19.70	20.20	
Butler, Pa. A10		19.20	19.70	20.20	
Vandergrift, Pa. U5	16.60	17.60	19.20	20.20	15.25*
Warren, O. R2					15.25†

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed 1/2c lower. **Cut lengths, 1/2-cent lower.

Weirton, W. Va. W6	10.45
Youngstown Y1	10.65

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2	7.90
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STRIP, C.R. Electroalvanized

Cleveland A7	7.15
Dover, O. G6	7.15
Evanston, Ill. M22	7.25
Riverdale, Ill. A1	7.25
Warren, O. B9, T5	7.15
Worcester, Mass. A7	7.70
Youngstown J5	7.15

*Plus galvanizing extras.

STRIP, Galvanized

(Continuous)	
Sharon, Pa. S3	7.275

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale, Ill. A1	5.50
Sharon, Pa. S3	5.35
Youngstown U5	5.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Alliquippa, Pa. J5	\$3.75	\$9.00	\$9.40
Fairfield, Ala. T2	8.85	9.10	9.50
Fairless, Pa. U5	8.85	9.10	9.50
Fontana, Calif. K1	9.50	9.75	10.15
Gary, Ind. U5	8.75	9.00	9.40
GraniteCity, Ill. G4	8.85	9.10	9.50
Indiana Harbor, Ind. I-2, Y1	8.75	9.00	9.40
Irvin, Pa. U5	8.75	9.00	9.40
Niles, O. R2	8.75	9.00	9.40
Pittsburg, Calif. C11	9.50	9.75	10.15
SparrowsPoint, Md. B2	8.85	9.10	9.50
Weirton, W. Va. W6	8.75	9.00	9.40
Yorkville, O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Alliquippa, Pa. J5	7.725	7.925	8.125
Niles, O. R2	7.725	7.925	8.125

TINPLATE, American

lb	lb	
Alliquippa, Pa. J5	\$10.05	\$10.30
Fairfield, Ala. T2	10.15	10.40
Fairless, Pa. U5	10.15	10.40
Fontana, Calif. K1	10.80	11.05
Gary, Ind. U5	10.05	10.30
Irvin, Pa. U5	10.05	10.30
Pitts., Calif. C11	10.80	11.05
Sp. Pt., Md. B2	10.15	10.40
Weirton, W. Va. W6	10.05	10.30
Yorkville, O. W10	10.05	10.30

BLACK PLATE (Base Box)

Alliquippa, Pa. J5	\$7.85
Fairfield, Ala. T2	7.95
Fairless, Pa. U5	7.95
Fontana, Calif. K1	8.60
Gary, Ind. U5	7.85
GraniteCity, Ill. G4	7.95
Ind. Harbor, Ind. I-2, Y1	7.85
Irvin, Pa. U5	7.85

HOLLOWARE ENAMELING

Black Plate (29 Gage)	
Alliquippa, Pa. J5	\$7.50
Gary, Ind. U5	7.50
GraniteCity, Ill. G4	7.60
Ind. Harbor, Ind. Y1	7.50
Irvin, Pa. U5	7.50
Yorkville, O. W10	7.50
MANUFACTURING TERNES	
(Special Coated, Base Box)	
Gary, Ind. U5	\$9.70
Irvin, Pa. U5	9.70
ROOFING SHORT TERNES	
(8 lb Coated, Base Box)	
Gary, Ind. U5	\$11.25

WIRE

WIRE, Manufacturers Bright,

Low Carbon

AlabamaCity, Ala. R2	7.65
Alliquippa, Pa. J5	7.65
Alton, Ill. L1	7.85
Atlanta A11	7.85
Bartonsville, Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	7.65
Cleveland A7, C20	7.65
Crawfordsville, Ind. M8	7.75
Donora, Pa. A7	7.65
Duluth A7	7.65
Fairfield, Ala. T2	7.65
Fosteria, O. (24) S1	7.75
Houston S5	7.90
Jacksonville, Fla. M8	8.00
Johnstown, Pa. B2	7.65
Joliet, Ill. A7	7.65
KansasCity, Mo. S5	7.90
Kokomo, Ind. C16	7.75
Los Angeles B3	8.60
Minnequa, Colo. C10	7.90
Monessen, Pa. P7, P16	7.65
N. Tonawanda, N.Y. B11	7.65
Palmer, Mass. W12	7.95
Pittsburg, Calif. C11	8.60
Portsmouth, O. P12	7.65
Rankin, Pa. A7	7.65
S. Chicago, Ill. R2	7.65
S. San Francisco C10	8.60
SparrowsPoint, Md. B2	7.75
Sterling, Ill. (1) N15	7.65
Sterling, Ill. N15	7.75
Struthers, O. Y1	7.65
Waukegan, Ill. A7	7.65
Worcester, Mass. A7	7.95

WIRE, Gal'd ACSR for Cores

Bartonsville, Ill. K4	12.65
Buffalo W12	12.65
Cleveland A7	12.65
Donora, Pa. A7	12.65
Duluth A7	12.65
Johnstown, Pa. B2	12.65
Minnequa, Colo. C10	12.75
Monessen, Pa. P16	12.65
Muncie, Ind. I-7	12.85
New Haven, Conn. A7	12.95
Palmer, Mass. W12	12.95
Pittsburg, Calif. C11	13.45
Portsmouth, O. P12	12.65
Roebing, N.J. R5	12.95
SparrowsPt., Md. B2	12.75
Struthers, O. Y1	12.65
Trenton, N.J. A7	12.95
Waukegan, Ill. A7	12.65
Worcester, Mass. A7	12.95

WIRE, Upholstery Spring

Alliquippa, Pa. J5	9.30
Alton, Ill. L1	9.50
Buffalo W12	9.30
Cleveland A7	9.30
Donora, Pa. A7	9.30
Duluth A7	9.30
Johnstown, Pa. B2	9.30
KansasCity, Mo. S5	9.55
Los Angeles B3	10.25
Minnequa, Colo. C10	9.50
Monessen, Pa. P7, P16	9.30
New Haven, Conn. A7	9.60
Palmer, Mass. W12	9.60

(A) Flow and Mild Flow; add 0.25c for Improved Flow

WIRE, Tire Bead	
Bartonville, Ill. K4	16.55
Monessen, Pa. P16	16.55
Roebing, N.J. R5	17.05
WIRE, Cold-Rolled Flat	
Anderson, Ind. G6	11.65
Baltimore T6	11.95
Boston T6	11.95
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville, Ind. M8	11.65
Dover, O. G6	11.65
Fostoria, O. S1	11.95
Franklin Park, Ill. T6	11.75
Kokomo, Ind. C16	11.65
Mason, O. R8	11.65
Milwaukee C23	11.85
Monessen, Pa. P7, P16	11.65
Palmer, Mass. W12	11.95
Pawtucket, R.I. N8	11.95
Philadelphia P24	11.95
Riverdale, Ill. A1	11.75
Rome, N.Y. R6	11.65
Sharon, Pa. S3	11.65
Trenton, N.J. R5	11.95
Warren, O. B9	11.65
Worcester, Mass. A7, T6	11.95

NAILS, Stock	Col.
Alabama City, Ala. R2	173
Aliquippa, Pa. J5	173
Atlanta A11	175
Bartonville, Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville, Ind. M8	175
Donora, Pa. A7	173
Duluth A7	173
Houston, Tex. S5	178
Fairfield, Ala. T2	173
Jacksonville, Fla. (20) M8	184
Joliet, Ill. A7	173
Johnstown, Pa. B2	173
Kansas City, Mo. S5	178
Kokomo, Ind. C16	175
Minnequa, Colo. C10	178
Monessen, Pa. P7	173
Pittsburg, Calif. C11	192
Rankin, Pa. A7	173
S. Chicago, Ill. R2	173
Sparrows Pt., Md. B2	175
Sterling, Ill. (7) N15	175
Worcester, Mass. A7	179

(To Wholesalers; per cwt)
Galveston, Tex. D7 \$8.95

NAILS, Cut (100 lb keg)	
To Dealers (33)	
Conshohocken, Pa. A3	\$9.80
Wheeling, W. Va. W10	9.80

POLISHED STAPLES	Col.
Alabama City, Ala. R2	175
Aliquippa, Pa. J5	175
Atlanta A11	177
Bartonville, Ill. K4	177
Crawfordsville, Ind. M8	177
Donora, Pa. A7	175
Duluth A7	175
Fairfield, Ala. T2	175
Jacksonville, Fla. (20) M8	186
Joliet, Ill. A7	175
Johnstown, Pa. B2	175
Kokomo, Ind. C16	177
Minnequa, Colo. C10	180
Pittsburg, Calif. C11	194
Rankin, Pa. A7	175
S. Chicago, Ill. R2	175
Sparrows Pt., Md. B2	177
Sterling (7) N15	175
Worcester, Mass. A7	181

TIE WIRE, Automatic Baler	
(14 1/2 Ga.)(Per 97 lb Net Box)	
Col No. 3150	
Alabama City, Ala. R2	\$10.26
Atlanta A11	10.36
Bartonville, Ill. K4	10.36
Buffalo W12	9.82
Chicago W13	10.26
Crawfordsville, Ind. M8	10.36
Donora, Pa. A7	10.26
Duluth A7	10.26
Fairfield, Ala. T2	10.26
Houston S5	10.51
Jacksonville, Fla. M8	10.82
Johnstown, Pa. B2	10.26
Joliet, Ill. A7	10.26
Kansas City, Mo. S5	10.51
Kokomo, Ind. C16	10.36
Los Angeles B3	11.05
Minnequa, Colo. C10	10.51
Pittsburg, Calif. C11	11.04
S. Chicago, Ill. R2	10.26
S. San Francisco C10	11.04
Sparrows Pt., Md. B2	10.36
Sterling, Ill. (7) N15	10.36

Coil No. 6500 Stand.	
Alabama City, Ala. R2	\$10.60
Atlanta A11	10.70
Bartonville, Ill. K4	10.70
Buffalo W12	10.15
Chicago W13	10.60
Crawfordsville, Ind. M8	10.70
Donora, Pa. A7	10.60
Duluth A7	10.60
Fairfield, Ala. T2	10.60
Houston S5	10.85

Jacksonville, Fla. M8	11.16
Johnstown, Pa. B2	10.60
Joliet, Ill. A7	10.60
Kansas City, Mo. S5	10.85
Kokomo, Ind. C16	10.70
Los Angeles B3	11.40
Minnequa, Colo. C10	10.85
Pittsburg, Calif. C11	11.40
S. Chicago, Ill. R2	10.60
S. San Francisco C10	11.40
Sparrows Pt., Md. B2	10.70
Sterling, Ill. (37) N15	10.70

Coil No. 6500 Interim	
Alabama City, Ala. R2	\$10.65
Atlanta A11	10.75
Bartonville, Ill. K4	10.75
Buffalo W12	10.20
Chicago W13	10.65
Crawfordsville, Ind. M8	10.75
Donora, Pa. A7	10.65
Duluth A7	10.65
Fairfield, Ala. T2	10.65
Houston S5	10.90
Jacksonville, Fla. M8	11.21
Johnstown, Pa. B2	10.65
Joliet, Ill. A7	10.65
Kansas City, Mo. S5	10.90
Kokomo, Ind. C16	10.75
Los Angeles B3	11.45
Minnequa, Colo. C10	10.90
Pittsburg, Calif. C11	11.45
S. Chicago, Ill. R2	10.65
S. San Francisco C10	11.45
Sparrows Pt., Md. B2	10.75
Sterling, Ill. (37) N15	10.75

BALE TIES, Single Loop	Col.
Alabama City, Ala. R2	212
Atlanta A11	214
Bartonville, Ill. K4	214
Crawfordsville, Ind. M8	214
Donora, Pa. A7	212
Duluth A7	212
Fairfield, Ala. T2	212
Houston S5	217
Jacksonville, Fla. M8	219
Joliet, Ill. A7	212
Kansas City, Mo. S5	217
Kokomo, Ind. C16	214
Minnequa, Colo. C10	217
Pittsburg, Calif. C11	236
S. San Francisco C10	236
Sterling, Ill. (7) N15	214
Sparrows Pt., Md. B2	214
Williamsport, Pa. S19	175

FENCE POSTS	
Birmingham C15	171
Chicago Hts., Ill. C2, I-2	172
Duluth A7	172
Franklin, Pa. F5	172
Huntington, W. Va. C15	171
Johnstown, Pa. B2	172
Marion, O. P11	172
Minnequa, Colo. C10	177
Sterling, Ill. (1) N15	172
Tonawanda, N.Y. B12	174

WIRE, Barbed	Col.
Alabama City, Ala. R2	193
Aliquippa, Pa. J5	190
Atlanta A11	198
Bartonville, Ill. K4	198
Crawfordsville, Ind. M8	198
Donora, Pa. A7	193
Duluth A7	193
Fairfield, Ala. T2	193
Houston, Tex. S5	198
Jacksonville, Fla. M8	203
Johnstown, Pa. B2	193
Joliet, Ill. A7	193
Kansas City, Mo. S5	198
Kokomo, Ind. C16	195
Minnequa, Colo. C10	198
Monessen, Pa. P7	196
Pittsburg, Calif. C11	213
Rankin, Pa. A7	193
S. Chicago, Ill. R2	193
S. San Francisco C10	213
Sparrows Pt., Md. B2	198
Sterling, Ill. (7) N15	198

WOVEN FENCE, 9-15 Ga.	Col.
Ala. City, Ala. R2	187
Aliquippa, Pa. 9-14 1/2 ga. J5	190
Atlanta A11	192
Bartonville, Ill. K4	192
Crawfordsville, Ind. M8	192
Donora, Pa. A7	187
Duluth A7	187
Fairfield, Ala. T2	187
Houston, Tex. S5	192
Jacksonville, Fla. M8	197
Johnstown, Pa. (43) B2	190
Joliet, Ill. A7	187
Kansas City, Mo. S5	192
Kokomo, Ind. C16	189
Minnequa, Colo. C10	192
Pittsburg, Calif. C11	210
Rankin, Pa. A7	187
S. Chicago, Ill. R2	187
Sterling, Ill. (7) N15	192

WIRE (16 gage) Stone	
Ala. City, Ala. R2	17.15 18.70
Aliquippa, Pa. J5	17.15 18.95
Bartonville K4	17.25 19.05
Cleveland A7	17.15

Crawfordsville M8	17.25 19.05
Fostoria, O. S1	17.65 19.20
Houston S5	17.40 18.95
Jacksonville M8	17.50 19.30
Johnstown B2	17.15 18.95
Kan. City, Mo. S5	17.40
Kokomo C16	17.25 18.80
Minnequa C10	17.40 18.95
Pitts., Mass. W12	17.45 19.00
Pitts., Calif. C11	17.50 19.05
Sparrows Pt. B2	17.25 19.05
Sterling (37) N15	17.25 19.05
Waukegan A7	17.15 18.70
Worcester A7	17.45

WIRE, Merchant Quality	
(6 to 8 gage) An'd Galv.	
Ala. City, Ala. R2	8.65 9.20
Aliquippa J5	8.65 9.25
Atlanta (48) A11	8.75 9.425
Bartonville (48) K4	8.75 9.425
Buffalo W12	8.65 9.20
Cleveland A7	8.65
Crawfordsville M8	8.75 9.425
Donora, Pa. A7	8.65 9.20
Duluth A7	8.65 9.20
Fairfield T2	8.65 9.20
Houston (48) S5	8.90 9.45
Jacks., Fla. M8	8.90 9.675
Johnstown B2 (48)	8.65 9.325
Joliet, Ill. A7	8.65 9.20
Kans. City (48) S5	8.90 9.45
Kokomo C16	8.75 9.30
Los Angeles B3	9.60 10.275
Minnequa C10	8.90 9.45
Monessen P7 (48)	8.65 9.25
Palmer, Mass. W12	8.95 9.50
Pitts., Calif. C11	9.60 10.15
Rankin, Pa. A7	8.65 9.20
S. Chicago R2	8.65 9.20
S. San Fran. C10	9.60 10.15
Sparrows Pt. B2 (48)	8.75 9.425
Sterling (48) N15	8.90 9.575
Sterling (1) (48)	8.80 9.475
Struth., O. (48) Y1	8.65 9.30
Worcester, Mass. A7	8.95 9.50

Based on zinc price of:
*13.50c. †5c. ‡10c. ††10.50c. †††Less
than 10c. †††10.50c. †††Subject
to zinc equalization extras.

FASTENERS	
(Base discounts, full con-	
tainer quantity, per cent of	
list, f.o.b. mill)	
BOLTS	
Carriage, Machine Bolts	
Full Size Body (cut thread)	
1/2 in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
1/2 in. thru 1 in.:	
6 in. and shorter	39.0
Longer than 6 in.	35.0
1 1/2 in. and larger:	
All lengths	35.0
Undersized Body (rolled	
thread)	
1/2 in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	15.0
1/2 in. and larger:	
All lengths	12.0
Carriage, Machine, Lag Bolts	
Hot Galvanized:	
1/2 in. and smaller:	
6 in. and shorter	49.0
Longer than 6 in.	39.0
1/2 in. and larger:	
6 in. and shorter	49.0
Longer than 6 in. or	
longer than 6 in.	39.0
Blank Bolts	39.0
Step, Elevator, Tire Bolts	49.0
Stove Bolts, Slotted:	
3/4 to 1 1/2 in. incl.	
3 in. and shorter	55.0
1 1/2 to 2 1/2 in., inclu-	
sive	55.0

NUTS	
Reg. & Heavy Square Nuts:	
All sizes	55.5
Square Nuts, Reg. &	
Heavy, Hot Galvanized:	
All sizes	41.0
Hex Nuts, Reg. &	
Heavy, Hot Pressed:	
1/2 in. and smaller	60.5
1/2 in. to 1 in., incl.	55.5
1 1/2 in. to 1 1/2 in.,	
incl.	58.5
1 in. and larger	53.5
Hex Nuts, Reg. &	
Heavy, Cold Punched:	
1/2 in. and smaller	60.5
1/2 in. to 1 1/2 in., incl.	55.5
1 in. and larger	53.5
Hex Nuts, All Types,	
Hot Galvanized:	
1/2 in. and smaller	46.5
1/2 in. to 1 in., incl.	41.5
1 1/2 in. to 1 1/2 in.,	
incl.	46.5

Hex Nuts, Semifinished,	
Heavy (Incl. Slotted):	
1/2 in. and smaller	60.5
1/2 in. to 1 1/2 in.,	
incl.	55.5
1 in. and larger	53.5
Hex Nuts, Finished (Incl.	
Slotted and Castillated):	
1 in. and smaller	63.0
1 1/2 in. to 1 1/2 in.,	
incl.	59.0
1 in. and larger	53.5
Semifinished Hex Nuts, Reg.	
(Incl. Slotted):	
1/2 in. and smaller	60.5
1/2 in. to 1 in., incl.	63.0
1 1/2 in. to 1 1/2 in.,	
incl.	59.0
1 in. and larger	53.5

CAP AND SETSCREWS	
(Base discounts, packages,	
per cent off list, f.o.b. mill)	
Hex Head Capscrews,	
Coarse or Fine Thread,	
Bright:	
6 in. and shorter:	
1/2 in. and smaller	40.0
1/2 in. to 1 in.	22.0
diam.	

BOILER TUBES	
Net base c.l. prices, dollars per 100 ft. mill; minimum	
wall thickness, cut lengths 10 to 24 ft. inclusive.	
O.D.	B.W.
In.	Gage
1	13
1 1/2	13
2	13
2 1/2	13
3	12
3 1/2	12
4	12
4 1/2	12
5	12

TIE PLATES	
Fairfield, Ala. T2	6.60
Gary, Ind. U5	6.60
Ind. Harbor, Ind. I-2	6.60
Lackawanna, N.Y. B2	6.60
Minnequa, Colo. C10	6.60
Seattle B3	6.75
Steeltown, Pa. B2	6.60
Torrance, Calif. C11	6.75
JOINT BARS	
Bessemer, Pa. U5	6.975
Fairfield, Ala. T2	6.975
Ind. Harbor, Ind. I-2	6.975
Joliet, Ill. U5	6.975
Lackawanna, N.Y. B2	6.975
Minnequa, Colo. C10	6.975
Steeltown, Pa. B2	6.975

AXLES	
Ind. Harbor, Ind. S13	8.775
Johnstown, Pa. B2	8.775

Footnotes	
(1) Chicago base.	
(2) Angles, flats, bands.	
(3) Merchant.	
(4) Reinforcing.	
(5) 1 1/2 to under 1 7/16 in.;	
1 7/16 to under 1 15/16 in.,	
6.70c; 1 15/16 to 8 in.,	
inclusive, 7.05c.	
(6) Chicago or Birm. base.	
(7) Chicago base 2 cols. lower.	
(8) 13 Ga. and heavier	
(9) Merchant quality; add 0.35c	
for special quality.	
(10) Pittsburgh base.	
(11) Cleveland & Pitts. base.	
(12) Worcester, Mass., base.	
(13) Add 0.25c for 17 Ga. &	
heavier.	
(14) Gage 0.143 to 0.249 in.;	
for gage 0.142 and lighter,	
5.80c.	
(15) 3/4" and thinner.	
(16) 1 lb and under.	
(17) Flats only; 0.25 in. &	
heavier.	
(18) To dealers.	
(19) Chicago & Pitts. base.	
(20) Plus 1c per 100 lb.	
(21) New Haven, Conn. base.	
(22) Deld. San Francisco Bay	
area.	
(23) Special quality.	
(24) Deduct 0.15c, finer than	
15 Ga.	
(25) Bar mill bands.	

Longer than 6 in.:	
1/2 in. and smaller	
1/2 in. to 1 in.	
diam.	
High Carbon, Heat Treat	
6 in. and shorter:	
1/2 in. and smaller	2
1/2 in. to 1 in.	
diam.	
Longer than 6 in.:	
1/2 in. and smaller	1
1/2 in. to 1 in.	
diam.	
Flat Head Capscrews:	
1/2 in. and smaller	7
Set screws, Square Head,	
Cup Point, Coarse Thread	
Through 1 in. diam:	
6 in. and shorter	N
Longer than 6 in.	2

SEAMLESS STANDARD PIPE, Threaded and Coupled				Carload discounts from list, %										
—Inches	2		2½		3		3½		4		5		6	
Per Ft	37c		58.5c		76.5c		92c		\$1.09		\$1.48		\$1.92	
nds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Quippa, Pa. J5	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
Bridge, Pa. N2	+9.25	....	+2.75	....	+0.25	....	1.25	....	1.25	....	1	....	3.5	....
ain, O. N3	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25
ngstown Y1	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled										Carload discounts from list, %					
ngstown R2	+9.25	+24.25	+2.75	+19.5	+0.25	+17	1.25	+15.5	1.25	+15.5	1	+15.75	3.5	+13.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled						Carload discounts from list, %								
—Inches	1½		2		3		3½		4		5		6	
Per Ft	5.5c		6c		8.5c		8.5c		11.5c		17c		23c	
nds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Quippa, Pa. J5	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
on, Ill. L1	.....	.....	.....	.....	.....	.....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
wood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
ler, Pa. P6	5.5	+21	+6.5	+30	+17	+38.5	.....	.....	.....	.....	.....	.....	.....	.....
a, Pa. N2	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
less, Pa. N3	.....	.....	.....	.....	.....	.....	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
tana, Calif. K1	.....	.....	.....	.....	.....	.....	+8.25	+23.5	+5.25	+19.5	+1.75	+15	0.75	+14.25
ana Harbor, Ind. Y1	.....	.....	.....	.....	.....	.....	4.25	+11	7.25	+7	10.75	+2.5	13.25	+3.25
ain, O. N3	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
ron, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	.....	.....	.....	.....	.....	.....	.....	.....
ron, Pa. M6	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
rows Pt., Md. B2	3.5	+23	8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5	12.25	+2.75
atland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75
ngstown R2, Y1	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5	14.25	+0.75

—Inches	1½		2		2½		3		3½		4	
Per Ft	27.5c		37c		58.5c		76.5c		92c		\$1.09	
nds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Quippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	.....	.....	.....	.....
n, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	.....	.....	.....	.....
wood, W. Va. W10..	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
a, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
less, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
tana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13	+7.25	+24	+7.25	+24
ana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5	5.25	+11.5	5.25	+11.5
ain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	.....	.....	.....	.....
on, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	.....	.....	.....	.....
rows Pt., Md. B2..	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5	4.25	+12.5	4.25	+12.5
atland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5
ngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5	6.25	+10.5	6.25	+10.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

—Re-rolling—		Forg- ing	H.R. Strip	Wire Rods; C.F.	Bars; Struc- tural	C.R. Strip; Flat	Wire	Plates	Sheets
Ingot	Slabs	Billets	Strip	Wire	Shapes	Wire	Wire	Plates	Sheets
22.00	27.00	36.00	36.00	42.00	42.00	44.25	48.50	45.00	45.00
23.75	30.25	36.50	39.00	40.75	43.00	45.00	49.25	45.00	45.00
23.25	28.00	37.25	37.25	42.00	44.25	46.25	51.25	47.50	47.50
25.25	31.50	38.00	40.50	42.75	45.00	47.25	52.00	52.00	52.00
25.50	32.75	40.75	45.75	45.00	47.25	49.50	57.00	57.00	57.00
27.00	33.25	40.50	44.25	45.50	48.00	50.00	56.75	56.75	56.75
28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75	58.75	58.75
30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00	63.00	63.00
39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50	80.50	80.50
49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75	96.75	96.75
39.75	49.50	62.25	69.25	69.25	73.00	76.75	81.50	81.50	81.50
48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00	101.00	101.00
32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50	65.50	65.50
CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25	79.25
19.50	25.50	32.00	36.00	33.50	35.25	37.50	46.75	46.75	46.75
16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25	40.25	40.25
33.50	41.75	39.25	41.25	39.25	41.25	45.25	62.00	62.00	62.00
17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75	40.75	40.75
29.50	37.75	33.00	34.75	33.00	34.75	36.75	51.75	51.75	51.75
39.25	59.00	44.25	46.50	44.25	46.50	47.75	70.00	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Div., J. Porter Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., J. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. P. & Co.; G. O. Carlson Inc.; Charter Wire Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Per-Harris Co.; Eastern Stainless Steel Corp.; Elwood Ivins Steel Tube Works Inc.; Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Ana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Johnson Steel & Wire Co. Inc.; Jones & Laughlin Steel Corp.; Joslyn Mfg. & Supply Co.; Kennmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McInnes Steel McLouth Steel Corp.; Metal Forming Corp.; National-Standard Co.; National Tube U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Sawhill Tubular Products Inc.; Sharon Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stain-Welded Products Inc.; Standard Tube Co.; Stainless Steel Div., Jones & Laughlin Steel Superior Steel Corp.; Superior Tube Co.; Techalloy Co. Inc.; Timken Roller Bearing Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

Stainless	Plates				Sheets	
	5%	10%	15%	20%	Carbon Base	Carbon Base
302	.....	.....	.....	.....	37.50	37.50
304	34.70	37.95	42.25	46.70	40.00	40.00
304L	36.90	40.55	45.10	49.85	.....	.....
316	40.35	44.40	49.50	54.50	58.75	58.75
316L	45.05	49.35	54.70	60.10	.....	.....
316 Cb	47.30	53.80	61.45	69.10	.....	.....
321	36.60	40.05	44.60	49.30	47.25	47.25
347	38.25	42.40	47.55	52.80	57.00	57.00
405	28.60	29.85	33.35	36.85	.....	.....
410	28.15	29.55	33.10	36.70	.....	.....
430	28.30	29.80	33.55	37.25	.....	.....
Inconel	48.90	59.55	70.15	80.85	.....	.....
Nickel	41.65	51.95	62.30	72.70	.....	.....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	.....	.....
Monel	43.35	53.55	63.80	74.05	.....	.....
Copper*	.....	.....	.....	46.00	.....	.....

Strip, Carbon Base
—Cold Rolled—
10% Both Sides
Copper* 33.95 40.25

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	\$ per lb	Grade	\$ per lb
Regular Carbon	0.290	Cr Hot Work	0.45-0.495
Extra Carbon	0.345	W-Cr Hot Work	0.43-0.475
Special Carbon	0.41-0.45	V-Cr Hot Work	0.460
Oil Hardening	0.450	Hi-Carbon-Cr	0.830

Grade by Analysis (%)					
W	Cr	V	Co	Mo	\$ per lb
20.25	4.25	1.6	12.25	.....	4.170
18.25	4.25	1	4.75	.....	2.385
18	4	2	9	.....	2.755
18	4	2	.....	.....	1.845
18	4	1	.....	.....	1.680
9	3.5	.....	.....	.....	1.275
13.5	4	3	.....	.....	1.945
13.75	3.75	2	5	.....	2.325
6.4	4.5	1.9	.....	5	1.185
6	4	3	.....	6	1.430
1.5	4	1	.....	8.5	1.040

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malle- able	Besse- mer		Basic	No. 2 Foundry	Malle- able	Besse- mer
Birmingham District					Youngstown District				
Alabama City, Ala. R2	62.00	62.50	....	....	Hubbard, O. Y1	....	....	66.50	....
Birmingham R2	62.00	62.50†	....	....	Sharpville, Pa. S6	66.00	....	66.50	67.00
Birmingham U6	....	62.50†	66.50	....	Youngstown Y1	....	....	66.50	67.00
Woodward, Ala. W15	62.00**	62.50†	66.50	....	Mansfield, O., deld.	70.90	....	71.40	71.90
Cincinnati, deld.	....	70.20	....	....	Duluth I-3	66.00	66.50	66.50	67.00
Buffalo District					Erie, Pa. I-3	66.00	66.50	66.50	67.00
Buffalo H1, R2	66.00	66.50	67.00	67.50	Everett, Mass. E1	66.50	67.00	67.50	....
N. Tonawanda, N.Y. T9	....	66.50	67.00	67.50	Fontana, Calif. K1	....	75.00	75.50	....
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50	Geneva, Utah C11	66.00	66.50	....	....
Boston, deld.	77.29	77.79	78.29	....	Granite City, Ill. G4	67.90	68.40	68.90	....
Rochester, N.Y., deld.	69.02	69.52	70.02	....	Ironport, Utah C11	66.00	66.50	....	....
Syracuse, N.Y., deld.	70.12	70.62	71.12	....	Minnequa, Colo. C10	68.00	68.50	69.00	....
Chicago District					Rockwood, Tenn. T3	....	62.50†	66.50	....
Chicago I-3	66.00	66.50	66.50	67.00	Toledo, O. I-3	66.00	66.50	66.50	67.00
S. Chicago, Ill. R2	66.00	....	66.50	....	Cincinnati, deld.	72.54	73.04	....	....
S. Chicago, Ill. W14	66.00	....	66.50	67.00	**Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63. †Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63.50.				
Milwaukee, deld.	68.62	69.12	69.12	69.62	PIG IRON DIFFERENTIALS				
Muskegon, Mich., deld.	....	74.12	74.12	....	Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.				
Cleveland District					Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.				
Cleveland R2, A7	66.00	66.50	66.50	67.00	Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add \$2 per ton and each additional 0.25%, add \$1 per ton.				
Akron, O., deld.	69.12	69.62	69.62	70.12	BLAST FURNACE SILVERY PIG IRON, Gross Ton				
Mid-Atlantic District					(Base 6.00-6.50% silicon; add \$1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add \$1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add \$1 for each 0.50% Mn over 1%)				
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50	Jackson, O. I-3, J1	....	....	77.2	....
Chester, Pa. P4	66.50	67.00	67.50	....	Buffalo H1	....	....	78.5	....
Swedeland, Pa. A3	68.00	68.50	69.00	69.50	ELECTRIC FURNACE SILVERY IRON, Gross Ton				
New York, deld.	....	75.10	75.60	....	(Base 14.01-14.50% silicon; add \$1 for each 0.5% Si to 18%; \$1.25 for each 0.50% Mn over 1%; \$2 per gross ton premium for 0.045% max P)				
Newark, N.J., deld.	72.29	72.79	73.29	73.79	Calvert City, Ky. P15	....	....	\$99.0	....
Philadelphia, deld.	70.01	70.51	71.01	71.59	Niagara Falls, N.Y. P15	....	....	103.5	....
Troy, N.Y. R2	68.00	68.50	69.00	69.50	Keokuk, Iowa Open-hearth & Fdry, \$9 freight allowed K2	....	....	106.5	....
Pittsburgh District					Keokuk, Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to \$9, K2	....	....	106.5	....
Neville Island, Pa. P6	66.00	66.50	66.50	67.00	LOW PHOSPHORUS PIG IRON, Gross Ton				
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48	Lyles Tenn. T3 (Phos. 0.035% max)	....	....	\$78.5	....
McKees Rocks, Pa., deld.	....	67.60	67.60	68.13	Troy, N.Y. R2 (Phos. 0.035% max)	....	....	74.0	....
Lawrenceville, Homestead, Wilmerding, Monaca, Pa., deld.	....	68.26	68.26	68.79	Philadelphia, deld.	....	....	82.2	....
Verona, Trafford, Pa., deld.	68.29	68.82	68.82	69.35	Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	....	....	71.0	....
Brackenridge, Pa., deld.	68.60	69.10	69.10	69.63	Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	....	....	71.0	....
Midland, Pa. C18	66.00	....	....	....	Erie, Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	....	....	71.0	....
					Neville Island, Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	....	....	71.0	....

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Houston, Seattle no charge.

	SHEETS			STRIP	BARS			Standard	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††‡	Structural Shapes	Carbon	Floor
Atlanta	8.59§	9.86§	10.13§	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.23	8.88	9.76	8.76	9.06	9.13‡	15.18	9.19	8.66	10.14
Birmingham	8.18	9.45	10.15	8.23	8.60	10.57	....	8.64	8.56	10.70
Boston	9.31	10.40	11.41	9.35	9.68	....	15.24	9.59	9.65	11.13
Buffalo	8.25	9.45	11.07	8.50	8.80	....	15.00	8.90	8.90	10.45
Chattanooga	7.99	9.24	9.10	8.00	8.24	10.04	....	8.44	8.40	10.26
Chicago	8.20	9.45	10.00	8.23	8.60	8.80	14.65	8.64	8.56	9.88
Cincinnati	8.34	9.48	10.05	8.54	8.92	9.31	14.96	9.18	8.93	10.21
Cleveland	8.18	9.45	9.95	8.33	8.69	....	14.74	9.01	8.79	10.11
Denver	9.38	11.75	....	9.41	9.78	11.10	....	9.82	9.74	11.06
Detroit	8.43	9.70	10.35	8.58	8.90	9.15	14.91	9.18	8.91	10.13
Erie, Pa.	8.20	9.45	9.95¹⁰	8.50	8.75	9.05¹⁰	....	9.00	8.85	10.10
Houston	8.45	9.75	8.45	8.60	9.05	11.10	....	9.10	9.05	10.30
Jackson, Miss.	8.09	9.34	9.79	8.16	8.41	10.23	....	8.54	8.50	10.34
Los Angeles	9.50	10.75	11.65	9.55	9.70	12.75	16.00	9.60	9.55	11.70
Milwaukee	8.33	9.58	10.13	8.36	8.73	9.03	14.78	8.85	8.69	10.01
Moline, Ill.	8.55	9.80	10.35	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	9.31	9.57	....	15.09	9.35	9.43	10.71
Norfolk, Va.	8.05	....	....	8.55	8.60	10.80	....	8.95	8.45	9.95
Philadelphia	8.00	8.90	9.87	8.67	8.65	11.51#	15.01	8.50	8.77	9.77**
Pittsburgh	8.18	9.45	10.35	8.33	8.60	....	14.65	8.64	8.56	9.88
Portland, Oreg.	9.50	11.20	11.55	57.20	9.65	14.65	15.95	9.65	9.30	12.50
Richmond, Va.	8.45	....	10.40	9.15	9.15	....	....	9.40	8.85	10.35
St. Louis	8.54	9.79	10.36	8.59	8.97	9.41	15.01	9.10	8.93	10.25
St. Paul	8.79	10.04	10.61	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	9.45	9.70	13.00	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.00	57.20	10.00	10.10	14.05	9.80	9.70	12.10
Spokane, Wash.	9.95	11.15	12.00	....	10.00	10.10	14.05	9.80	9.70	12.10
Washington	8.48	9.58	....	9.06	9.15	9.73	....	9.35	8.86	10.36

*Prices do not include gage extras; †prices include gage and coating extras, except in Birmingham (coating extra excluded); ‡includes 35-cs bar quality extras; §42 in. and under; **½ in. and heavier; ††as annealed ‡‡over 4 in.; §§over 3 in.; # 1 in. round C1018.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg., 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; ¹—400 to 9999 lb; ²—1000 to 1999 lb; ³—2000 to 3999 lb; ⁴—2000 lb and over.

Refractories

Fire Clay Brick (per 100)
Heat Duty: Ashland, Grahn, Hayward, Chins, Haldeman, Olive Hill, Ky., Athens, Tex., Beech Creek, Clearfield, Curwense, Lock Haven, Lumber, Orviston, West, Pa., Bessemer, Ala., Farber, Mexico, Louis, Vandalla, Mo., Ironton, Oak Hill, Portsmouth, O., Ottawa, Ill., Stevens, Ga., \$135; Salina, Pa., \$140; Niles, \$138; Cutler, Utah, \$165.
Per-Duty: Ironton, O., Vandalla, Mo., Olive Hill, Ky., Clearfield, Salina, Pa., New Savage, St. Louis, \$175; Stevens Pottery, Ga., \$5; Cutler, Utah, \$233.
Silica Brick (per 1000)
 Standard: Alexandria, Claysburg, Mt. Union, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, O., Hawstone, Pa., \$150; Warren, Pa., Windham, O., Hays, Latrobe, Morris, Pa., \$155; E. Chicago, Ind., Joliet, Skdale, Ill., \$160; Lehigh, Utah, \$175; Los Angeles, \$180.
Per-Duty: Sproul, Hawstone, Pa., Niles, Arden, Windham, O., Leslie, Md., Athens, Pa., \$157; Morrisville, Hays, Latrobe, Pa., \$10; E. Chicago, Ind., \$167; Curtner, Calif., \$2.
Silica Brick (per 1000)
 Clearfield, Pa., \$140; Philadelphia, \$137; Colbridge, N. J., \$135.
Ladle Brick (per 1000)
Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill, Vanport, Pa., Mexico, Vandalla, Mo., Illinois, Irondale, New Salisbury, O., \$96.75; Clearfield, Pa., Portsmouth, O., \$102.
High-Alumina Brick (per 1000)
Per Cent: St. Louis, Mexico, Vandalla, Mo., \$5; Danville, Ill., \$238; Philadelphia, Clearfield, Pa., \$230; Orviston, Pa., \$245.

60 Per Cent: St. Louis, Mexico, Vandalla, Mo., \$295; Danville, Ill., \$298; Philadelphia, Clearfield, Orviston, Pa., \$305.
 70 Per Cent: St. Louis, Mexico, Vandalla, Mo., \$335; Danville, Ill., \$338; Philadelphia, Clearfield, Orviston, Pa., \$345.

Sleeves (per 1000)
 Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, \$188.

Nozzles (per 1000)
 Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, \$310.

Runners (per 1000)
 Reesdale, Johnstown, Bridgeburg, Pa., \$234.

Dolomite (per net ton)
 Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Nario, O., \$16.75; Thornton, McCook, Ill., \$17; Dolly Siding, Bonne Terre, Mo., \$15.

Magnesite (per net ton)
 Domestic, dead-burned, bulk $\frac{1}{2}$ in. grains with fines: Chewelah, Wash., Luning, Nev., \$46; $\frac{1}{2}$ in. grains with fines: Baltimore, \$73.

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF₂ content 72.5%, \$37-41; 70%, \$36.40; 60%, \$33-36.50. Imported, net tons, f.o.b. cars point of entry duty paid, metallurgical grade: European, \$33-34; Mexican, all-rail, duty paid, \$25.25-25.75; barge, Brownsville, Tex., \$27.25-27.75.

Metal Powder

Per pound f.o.b. shipping point in ton lots for minus mesh, except as noted) Cents
 Iron, Swedish: Deld. east of Mississippi river, ocean bags 3,000 lb and over... 10.50
 F.o.b. Riverton or Camden, N. J., west of Mississippi River... 9.50
 Iron, Domestic, + % Fe: Deld. east of Mississippi River, 23,000 lb and over 10.50
 F.o.b. Riverton, N.J., west of Mississippi River... 9.50
 Iron, Canadian: F.o.b. shipping point 9.50
 Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of $\frac{1}{8}$ in. x 1.3 in... 28.00
 Annealed, 99.5% Fe... 36.50
 Annealed (99 + % Fe) (minus 325 mesh)... 59.00
 Powder Flakes (minus 3, plus 100 mesh)... 29.00
 Bonyl Iron: 3.1-99.9%, 3 to 20 microns, depending on grade, 93 00-290.00 in standard 200-lb containers; all minus 200 mesh.

Aluminum:
 Atomized, 500 lb drum, frght allowed
 Carlots... 39.50
 Ton lots... 41.50
 Antimony, 500 lb lots... 32.00*
 Brass, 5000-lb lots... 32.00-39.70†
 Bronze, 5000-lb lots... 49.50-54.10†
 Copper:
 Electrolytic... 14.25*
 Reduced... 14.25*
 Lead... 7.50*
 Manganese:
 Minus 35 mesh... 64.00
 Minus 100 mesh... 70.00
 Minus 200 mesh... 75.00
 Nickel, unannealed... \$1.15
 Nickel-Silver, 5000-lb lots... 50.20-54.80†
 Phosphor-Copper, 5000-lb lots... 61.30
 Copper (atomized) 5000-lb lots... 41.80-50.30†
 Silicon... 47.50
 Solder... 7.00*
 Stainless Steel, 304... \$1.02
 Stainless Steel, 316... \$1.20
 Tin... 14.50*
 Zinc, 5000-lb lots 17.50-30.70†
 Tungsten:
 Melting grade, 99% 60 to 2000 mesh: 1000 lb and over... 3.75
 Less than 1000 lb... 3.90
 Chromium, electrolytic 99.8% Cr min metallic basis... 5.00
 *Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE		Per 100 lb
Inches—	Length	
Diam.		
2	24	\$57.75
2½	30	37.25
3	40	35.25
4	40	33.25
5½	40	33.00
6	60	30.00
7	60	26.75
8, 9, 10	60	26.50
12	72	25.50
14	60	25.50
16	72	24.50
17	60	25.50
18	72	24.50
20	72	24.00
24	84	24.75

CARBON		Per 100 lb
8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Ores

Lake Superior Iron Ore
 (Prices effective for the 1957 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)
 Mesabi bessemer... \$11.60
 Mesabi nonbessemer... 11.45
 Old range bessemer... 11.85
 Old range nonbessemer... 11.70
 Open-hearth lump... 12.70
 High phos... 11.45
 The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore
 Cents per unit, deld. E. Pa.
 New Jersey, foundry and basic 62-64% concentrates... 25.00-27.00

Foreign Iron Ore
 Cents per unit, c.i.f. Atlantic ports
 Swedish basic, 65%... 27.00-27.50
 N. African hematite (spot)... nom.
 Brazilian iron ore, 68-69%... 30.00

Tungsten Ore
 Net ton, unit, before duty
 Foreign wolframite, good commercial quality... 13.75-14.25
 Domestic, concentrates mine... 55.00

Manganese Ore
 Mn 46-48%, Indian (export tax included), \$1.35-1.45 per long ton unit, c.i.f. U. S. ports. Duty for buyer's account: other than Indian, \$1.35-1.45; contracts by negotiation.

Chrome Ore
 Gross ton f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian
 48% 3:1... \$55.00-58.00
 48% 2.8:1... 52.00-55.00
 48% no ratio... 46.00-48.00

South African Transvaal
 48% no ratio... \$40.00-41.00
 44% no ratio... 30.00-31.00

Turkish
 48% 3:1... \$59.00-62.00
Domestic
 Rail nearest seller
 18% 3:1... \$39.00

Molybdenum
 Sulphide concentrate, per lb of Mo content, mines, unpacked... \$1.18

Antimony Ore
 Per short ton unit of Sb content, c.i.f. seaboard
 55-60%... \$2.90-3.30
 60-65%... 3.30-3.60

Vanadium Ore
 Cents per lb V₂O₅
 Domestic... 31.00

Metallurgical Coke

Price per net ton
Beehive Ovens
 Connellsville, furnace... \$14.75-15.75
 Connellsville, foundry... 18.00-18.50
Oven Foundry Coke
 Birmingham, ovens... \$28.85
 Cincinnati, deld... 31.84
 Buffalo, ovens... 30.50
 Camden, N. J., ovens... 29.50
 Detroit, ovens... 30.50
 Pontiac, deld... 32.25
 Saginaw, deld... 33.83
 Erie, Pa., ovens... 30.50
 Everett, Mass., ovens
 New England, deld... 31.55*
 Indianapolis, ovens... 29.75
 Ironton, O., ovens... 29.00
 Cincinnati, deld... 31.84
 Kearny, N. J., ovens... 29.75
 Milwaukee, ovens... 30.50
 Painesville, O., ovens... 30.50
 Cleveland, deld... 32.69
 Philadelphia, ovens... 29.50
 St. Louis, ovens... 31.50
 Neville Island (Pittsburgh), Pa., ovens... 29.25
 St. Paul, ovens... 29.75
 Chicago, deld... 33.24
 Swedeland, Pa., ovens... 29.50
 Terre Haute, Ind., ovens... 29.75

*Ore within \$4.80 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens
 Pure benzene... 36.00
 Toluene, one deg... 32.00-34.00
 Industrial xylene... 32.00-35.00
 Per ton, bulk, ovens
 Ammonium sulfate... \$32.00
 Cents per pound, producing point
 Phenol: Grade 1, 15.00; Grade 2-3, 14.50; Grade 4, 16.50; Grade 5, 15.25.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305...	\$6.55	\$6.53	\$6.53	\$6.76
Bar Size Angles	6.62	6.57	6.57	6.75
Structural Angles	6.62	6.57	6.57	6.75
I-Beams	6.87	6.82	6.82	7.00
Channels	6.87	6.82	6.82	7.00
Plates (basic bessemer)	8.50	8.45	8.45	8.75
Sheets, H.R.	8.50	8.45	8.45	8.75
Sheets, C.R. (drawing quality)	9.00	8.95	8.95	9.25
Furring Channels, C.R., 1000 ft, $\frac{1}{2}$ x 0.30 lb per ft	26.79	26.67	26.67	27.36
Barbed Wire (†)	6.95	6.95	6.95	7.40
Merchant Bars	6.87	6.82	6.82	7.22
Hot-Rolled Bands	7.20	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (§)	8.38	8.38	8.38	8.58

†Per 82-lb, net, reel. §Per 100-lb kegs, 20d nails and heavier.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Pa. 21-23% Mn, \$105; 19-21% Mn, 1-3% Si, \$102.50; 16-19% Mn, \$100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx). Base price per net ton; \$255, Johnston, Duquesne, Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract \$2 for each 1% or fraction thereof of contained manganese over 76% or under 74% respectively.

(Mn 79-81%). Lump \$263 per net ton, f.o.b. Anacosta or Great Falls, Mont. Add \$2.60 for each 1% above 81%; subtract \$2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; 500 lb to 1999 lb, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, \$1.50 per lb of contained Ti; less ton \$1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot \$1.35, less ton \$1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract \$200 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract \$225 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk, 27.75c per lb of contained Cr; c.l. packed 29.3c, ton lot 31.05c; less ton 32.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-71%). Contract, carload, lump, bulk, C 0.025% max (Simplex) 34.75c per lb contained Cr, 0.02% max 41.5c, 0.03% max 41c, 0.06% max 39.5c, 0.1% max 39c, 0.15% max 38.75c, 0.2% max 38.5c, 0.5% max 38.25c, 1.0% max 37.5c, 1.5% max 37.35c, 2.0% max 37.25c. Ton lot, add 3.4c, less ton add 5.1c. Carload packed add 1.75c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 29.05c per lb of contained Cr. Packed, c.l. 30.65c, ton 32.45c, less ton 33.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8M x D, 20.85c, per lb of alloy, ton lot 22.10c; less ton lots 23.3c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome-Silicon: (Cr 39-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 41.35c per lb of contained Cr; 1" x down, bulk, 42.35c. Delivered.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about 1/8" thick) \$1.29 per lb, ton lot \$1.31, less ton lot \$1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovandium: Open-hearth Grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, \$3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) \$3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) \$3.40.

Grainal: Vanadium Grainal No. 1 \$1.05 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, \$1.38 per lb contained V₂O₅, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si. Packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 13c per lb of contained Si. Packed c.l. 15.5c, ton lot 16.95c, less ton 18.6c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c; less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed, c.l. 18.30c, ton lot 19.95c, less ton 21.2c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 0.75% max Fe, 0.07% max Ca). C.l. lump, bulk, 20.00c per lb of Si. Packed, c.l. 21.65c, ton lot 22.95c, less ton 23.95c. Add 0.5c for max 0.03% Ca grade. Deduct 0.5c for max 1% Fe grade analyzing min 99.75% Si; 0.75c for max 1.25% Fe grades analyzing min 96.75% Si. Spot, add 0.25c.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 10.65c per lb of alloy; ton lot, packed, 11.8c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, \$1.20 per lb of alloy; less than 100 lb \$1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) \$1.20; Grade C (19% min B) \$1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, \$5.25 per lb of contained B. Packed, carload \$5.40, ton to c.l. \$5.50, less ton \$5.60. Delivered.

Bortam: (B 1.5-1.9%). Ton lot, 45c per lb; less than ton lot, 50c per lb.

Carbortam: (1 to 2%). Contract, lump, carload 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Mn 1.5-3%). Contract, carload, lump, bulk 21c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3 lb each and containing 2 lb of Cr). Contract carload, bulk 19c per lb of briquet, carload packed in box pallets 19.2c, in bags 20.1c; 3000 lb to c.l. in box pallets 20.4c, 2000 lb to c.l. in bags, 21.3c; less than 2000 lb in bags 22.2c. Delivered. Add 0.25c for nothing. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract carload, bulk 14.8c per lb of briquet; c.l. packed, pallets 15c, bags 16c; 3000 lb to c.l. pallets 16.2c; 2000 lb to c.l. bags, 17.2c, less ton 18.1c. Delivered. Add 0.25c for nothing. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3 1/2 lb and containing 2 lb of Mn and approx 1/2 lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.2c, bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for nothing. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; c.l. packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l. bags 10.5c, less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2 1/2 lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l. pallets 9.65c; 2000 lb to c.l. bags 10.65c, less ton 11.55c. Delivered. Add 0.25c for nothing, small size only. Spot, add 0.25c.

Molybdenic-Oxide Briquets: (Containing 2 1/2% of Mo each). \$1.41 per pound of Mo contained. f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or mo \$2.95 per lb of contained W; 2000 lb W or mo 5000 lb W, \$3.05; less than 2000 lb W, \$3.1c. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Contract, ton lot 2" x D, \$4.90 per lb of contained Cb. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, 0.30% max). Ton lot 2" x D, \$4.25 per lb of contained Cb plus Ta, delivered; less ton lot \$4.30.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5.7% Fe 20% approx). Contract, c.l. packed 1/2-in. x 12 M 19c per lb of alloy, ton lot 20.15c, less ton 21.4c. Delivered. Spot, add 0.25c.

Graphidox No. 5: (Si 48-52%, Ca 5.7%, Ti 11%). C.l. packed, 19c per lb of alloy, ton lot 20.15c; less ton lot 21.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.1c per lb of alloy, ton lot 19.55c; less ton lot 20.8c, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; 1% Fe). Lump, carload, bulk 18.50c. Packed c.l. 19.50c, 2000 lb to c.l. 20.50c, less than 2000 lb 21c per lb of alloy. Delivered.

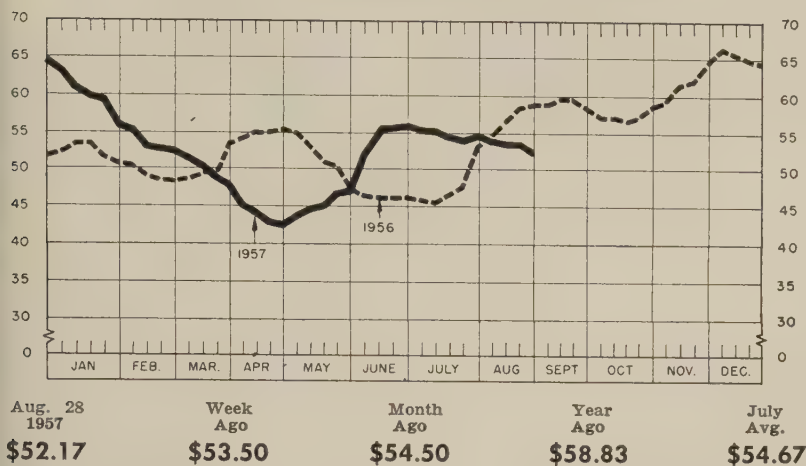
Ferrophosphorus: (23.25% based on 24% content with unitage of \$4 for each 1% of above or below the base); carload, f.o.b. severs' works, Mt. Pleasant, Siglo, Tenn., \$1 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa., \$1.68 in all sizes except powdered which is \$1.74.

Technical Molybdenic-Oxide: Per lb of contained Mo, in cans, \$1.39; in bags, \$1.38, f.o.b. Langeloth and Washington, Pa.

STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania—Compiled by STEEL



Scrap Prices Continue To Drop

STEEL's composite on No. 1 heavy melting steel declines to \$52.17, lowest level since last May. Market lacks domestic buying support

Scrap Prices, Page 204

Pittsburgh—Scrap prices are beginning to show weakness, following a prolonged period of slow buying by mills. Although prices are nominal, most grades declined \$1 a ton, partially in a reaction to lower prices in neighboring areas. An independent mill is purchasing No. 2 bundles at \$44 per ton—\$2 below the last price for that grade. Factory bundles are also weakening.

Chicago—Scrap prices continue to skid here. Drops of \$2 to \$3 a ton on important grades have been added to those posted previously, pushing the level to the lowest since early June. Consumers are in the driver's seat. Following purchases of sufficient tonnage to establish prices, they withdraw from the market.

Philadelphia—The price on No. 1 heavy melting steel is off \$1 a ton to \$51, delivered, on a light purchase. No. 2 heavy melting is off 50 cents a ton to \$45.50 and No. 2 bundles are at \$42.50, down \$1. Declines on other grades brought prices to \$55 on electric furnace bundles, \$36 on mixed borings and turnings, and \$47 on heavy

turnings. All other grades, including cast, are unchanged. Some trading was done in malleable at \$62, delivered.

Demand for open hearth scrap for export continues active. Two ships are being loaded, one for Argentina, with the cargo reportedly comprising No. 1 heavy melting steel only. Usually, export shipments include equal portions of No. 1 and No. 2 heavy melting steel and No. 2 bundles.

New York—Reflecting a lack of interest by the mills, scrap brokers have reduced their buying prices \$1 a ton on all steel grades for domestic shipment. They similarly reduced prices on heavy breakable cast.

Nickel-bearing steel scrap prices have dropped sharply because of the increasing supply of nickel and the slow rate of buying by consumers. Brokers have reduced prices on 18-8 sheets, clips, and solids to \$235-240, on 18-8 borings and turnings to \$135-140. Prices on straight chrome grades are unchanged.

Boston—Accompanied by a lack of buying from domestic consumers, primary grades of steel scrap

declined \$1.50 a ton. Brokers are paying \$40 to \$40.50 a ton, f.o.b. shipping point. Borings and turnings are notably slow. Cast scrap buying is confined to small lots with most foundries holding down their inventories.

Strong demand for steel scrap for export has depleted yard stocks at points where the freight rates are low to loading ports. Export prices for heavy melting steel range around \$2 a ton over brokers' buying prices.

Buffalo—The scrap market here was extremely dull last week. Dealers have been shipping against outstanding August mill orders and expect to have them cleaned up before the end of the month.

Little pressure is being exerted on the market in either direction, and most dealers believe that September prices will hold around current levels. Mills in this district are taking in fairly good sized tonnages of material, but there is no urgency to buy.

The specialty market is showing a fair amount of activity with prices holding steady. Cast business is dull, with foundries buying their needs on a hand-to-mouth basis.

Detroit—Scrap prices dropped rather sharply here as August auto lists closed. Ford Motor Co. sold an advertised 10,000 tons. Dealers and brokers report sales have been slow. Little scrap is being generated. Some tonnage has been shipped in from Ohio.

Youngstown—The iron and steel scrap market continues to mark time. Some No. 1 heavy melting scrap is moving on old orders placed by two steel firms at \$57 a gross ton. No No. 2 scrap has been sold for some time, and scrap is beginning to pile up in yards. A lot of it is high priced material; dealers are reluctant to let it go at too low a figure.

Cincinnati—Principal steelmaking grades of scrap are standing still pricewise in a market that shows signs of weakening. The weak undertone will probably be reflected at the beginning of September on new buying by mills. Scrap prices are finding some support by final covering by brokers on old orders. Brokers' buying prices on mixed borings and turn-

(Please turn to Page 209)

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported STEEL, Aug. 28, 1957. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Aug. 28	\$52.17
Aug. 21	53.50
July Avg.	54.67
Aug. 1956	57.13
Aug. 1952	43.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

YOUNGSTOWN

No. 1 heavy melting....	54.00-55.00
No. 2 heavy melting....	46.00-47.00
No. 1 bundles	54.00-55.00
No. 2 bundles	43.00-44.00
No. 1 busheling	54.00-55.00
Machine shop turnings..	23.00-24.00
Short shovel turnings..	29.00-30.00
Cast iron borings	29.00-30.00
Low phos.	56.00-57.00
Electric furnace bundles.	56.00-57.00

Railroad Scrap

No. 1 R.R. heavy melt..	58.00-59.00
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CHICAGO

No. 1 heavy melt., indus.	52.00-53.00
No. 1 hvy melt., dealer.	49.00-50.00
No. 2 heavy melting....	41.00-42.00
No. 1 factory bundles ..	55.00-56.00
No. 1 dealer bundles ..	50.00-51.00
No. 2 bundles	39.00-40.00
No. 1 busheling, indus..	52.00-53.00
No. 1 busheling, dealer.	49.00-50.00
Machine shop turnings..	32.00-33.00
Mixed borings, turnings.	34.00-35.00
Short shovel turnings..	34.00-35.00
Cast iron borings	34.00-35.00
Cut structural, 3 ft.	54.00-55.00
Punching & plate scrap.	55.00-56.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	43.00-44.00
Unstripped motor blocks.	32.00-33.00
Clean auto cast	50.00-51.00
Drop broken machinery..	50.00-51.00

Railroad Scrap

No. 1 R.R. heavy melt..	54.00-55.00
R.R. malleable	58.00-59.00
Rails, 2 ft and under ..	70.00-71.00
Rails, 18 in. and under.	71.00-72.00
Angles, splice bars	65.00-66.00
Rails, rerolling	71.00-72.00

Stainless Steel Scrap

18-8 bundles & solids..	275.00-285.00
18-8 turnings	175.00-185.00
430 bundles & solids..	95.00-100.00
430 turnings	65.00-70.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting....	45.00-46.00
No. 2 heavy melting....	40.00-41.00
No. 1 bundles	45.00-46.00
No. 2 bundles	36.00-37.00
No. 1 busheling	45.00-46.00
Machine shop turnings..	25.00-26.00
Mixed borings, turnings.	26.00-27.00
Short shovel turnings..	27.00-28.00
Punchings & plate scrap.	53.00-54.00

Cast Iron Grades

No. 1 cupola	51.00
Charging box cast	43.00
Stove plate	44.00
Heavy breakable	42.00
Unstripped motor blocks	30.00-31.00
Clean auto cast	52.00
Malleable	53.00+

†Nominal

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting....	49.50
No. 2 heavy melting....	47.00
No. 1 bundles	49.50
No. 2 bundles	42.00
No. 1 busheling	49.50
Machine shop turnings..	34.00
Short shovel turnings..	36.00

Cast Iron Grades

No. 1 cupola	48.00
Charging box cast	42.00
Heavy breakable cast..	42.00
Unstripped motor blocks	43.00
Brake shoes	40.00
Clean auto cast	48.00
Stove plate	44.00

Railroad Scrap

No. 1 R.R. heavy melt	57.00
Rails, 18 in. and under	73.00
Rails, random lengths..	68.00
Rails, rerolling	74.50
Angles, splice bars	61.00

PHILADELPHIA

No. 1 heavy melting....	51.00
No. 2 heavy melting....	45.50
No. 1 bundles	53.00
No. 2 bundles	42.50
No. 1 busheling	53.00
Electric furnace bundles.	55.00
Mixed borings, turnings.	36.00
Short shovel turnings..	37.00-38.00
Machine shop turnings..	34.00-35.00
Heavy turnings	47.00
Structurals & plate	58.00-59.00
Couplers, springs, wheels	67.50-68.00
Rail crops, 2 ft & under	69.00-71.00

Cast Iron Grades

No. 1 cupola	47.00
Heavy breakable cast..	53.00
Malleable	62.00
Drop broken machinery	57.00

†Nominal

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	49.00-50.00
No. 2 heavy melting	40.00-41.00
No. 1 bundles	49.00-50.00
No. 2 bundles	37.50-38.00
Machine shop turnings..	24.00-25.00
Mixed borings, turnings.	25.00-26.00
Short shovel turnings..	28.00-29.00
Low phos. (structural & plate)	52.00-53.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Unstripped motor blocks	39.00-40.00
Heavy breakable	46.00-47.00

Stainless Steel

18-8 sheets, clips, solids	235.00-240.00
18-8 borings, turnings.	135.00-140.00+
430 sheets, clips, solids	60.00-70.00
410 sheets, clips, solids	50.00-55.00

†Nominal

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting....	40.00-40.50
No. 2 heavy melting....	35.00-36.00
No. 1 bundles	40.00-40.50
No. 2 bundles	34.00-34.50
No. 1 busheling	40.00-40.50
Machine shop turnings..	24.00-25.00
Mixed borings, turnings	27.00-28.00
Short shovel turnings..	28.00-29.00
No. 1 cast	34.00-35.00
Mixed cupola cast	33.00-34.00
No. 1 machinery cast..	42.00-43.00

BUFFALO

No. 1 heavy melting....	49.00-50.00
No. 2 heavy melting....	42.50-43.50
No. 1 bundles	49.00-50.00
No. 2 bundles	39.50-40.50
No. 1 busheling	49.00-50.00
Mixed borings, turnings	33.00-34.00
Machine shop turnings..	31.00-32.00
Short shovel turnings..	34.00-35.00
Cast iron borings	33.00-34.00
Low phos.	55.00-56.00

Cast Iron Grades

No. 1 cupola	48.00-49.00
No. 1 machinery	53.00-54.00

Railroad Scrap

Rails, random lengths..	61.00-62.00
Rails, 3 ft and under ..	66.00-67.00
Railroad specialties ..	59.00-60.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting....	52.00-53.00
No. 2 heavy melting....	46.00-47.00
No. 1 bundles	52.00-53.00
No. 2 bundles	41.00-42.00
No. 1 busheling	52.00-53.00
Machine shop turnings..	33.00-34.00
Mixed borings, turnings.	28.00-29.00
Short shovel turnings..	36.00-37.00
Cast iron borings	28.00-29.00
Low phos. 18 in.	59.00-60.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast..	42.00-43.00
Charging box cast	42.00-43.00
Drop broken machinery	55.00-56.00

Railroad Scrap

No. 1 R.R. heavy melt.	56.00-57.00
Rails, 18 in. and under	71.00-72.00
Rails, random lengths..	64.00-65.00

BIRMINGHAM

No. 1 heavy melting....	49.00-50.00
No. 2 heavy melting....	39.00-40.00
No. 1 bundles	49.00-50.00
No. 2 bundles	33.00-34.00
No. 1 busheling	49.00-50.00
Cast iron borings	28.00-29.00
Short shovel turnings..	40.00-41.00
Machine shop turnings..	39.00-40.00
Bar crops and plates ..	55.00-56.00
Structurals & plate	55.00-56.00
Electric furnace bundles.	50.00-51.00
Electric furnace:	
3 ft and under	48.00-49.00
2 ft and under	49.00-50.00

Cast Iron Grades

(F.o.b. shipping point)	
No. 1 cupola	54.00-55.00
Stove plate	54.00-55.00
Unstripped motor blocks.	44.00-45.00
Charging box cast	37.00-38.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	55.00-56.00
Rails, 18 in. and under	69.00-70.00
Rails, rerolling	74.00-75.00
Rails, random lengths..	63.00-64.00
Angles, splice bars	60.00-61.00

SEATTLE

No. 1 heavy melting....	42.00
No. 2 heavy melting....	40.00
No. 1 bundles	40.00
No. 2 bundles	29.00
Machine shop turnings..	27.00
Mixed borings, turnings.	27.00
Electric furnace No. 1..	48.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast..	35.00
Unstripped motor blocks.	30.50
Stove plate (f.o.b. plant)	28.00

LOS ANGELES

No. 1 heavy melting....	46.00
No. 2 heavy melting....	43.00
No. 1 bundles	45.00
No. 2 bundles	38.00
Machine shop turnings..	32.00
Shoveling turnings	34.00
Cast iron borings	32.00
Cut structural and plate, 1 ft and under	61.00

Cast Iron Grades

(F.o.b. shipping point)	
No. 1 cupola	53.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00
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SAN FRANCISCO

No. 1 heavy melting....	47.00
No. 2 heavy melting....	45.00
No. 1 bundles	46.00
No. 2 bundles	35.00
Machine shop turnings..	32.00
Mixed borings, turnings.	32.00
Cast iron borings	32.00
Heavy turnings	32.00
Short shovel turnings..	32.00
Cut structurals, 3 ft.	56.00

Cast Iron Grades

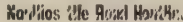
No. 1 cupola	53.00-54.00
Charging box cast	45.00-47.00
Stove plate	46.00
Heavy breakable cast..	40.00
Unstripped motor blocks	43.00
Clean auto cast	55.00
No. 1 wheels	48.00
Drop broken machinery	53.00

HAMILTON, ONT.

No. 1 heavy melting....	50.00
No. 2 heavy melting....	45.00
No. 1 bundles	50.00
No. 2 bundles	39.00
Mixed steel scrap	47.00
Mixed borings, turnings	24.00
Busheling, new factory:	
Prepared	50.00
Unprepared	44.00
Short steel turnings ..	30.00
Rails, rerolling	61.00

Cast Iron Grades†

No. 1 machinery cast..	50.00
†F.o.b. Hamilton, Ont.	

[illegible]

Put industrial advertising on your "payroll." Make it a part of your selling team.

271 Madison Avenue, New York 16, N. Y.



September 2, 1957

Another Copper Dip Looms

Industry thinks weakness in custom smelter and foreign prices will lower primary quotation for fifth time this year. Lead and zinc continue to show slight gains

Nonferrous Metal Prices, Pages 208 & 209
PRIMARY COPPER, already hit with four price cuts this year, appears headed for another slash in quotations. While no major producer admits such plans, the cut appears imminent. Some observers predict the current price (28.50 cents a pound) will be chopped by 0.50 to 0.75 cents.

Background—Only recently, producers were hopeful that the red metal was finally pulling out of its slump. But three price reductions within seven days for custom smelted copper knocked the quotation down to 27 cents a pound, which is 1.50 cents under the primary level. This spread is too large to hold up, observers believe.

Further weakening the price of U. S. primary are foreign quotations: The London Metal Exchange is quoting 25.30 cents a pound; the Rhodesian Selection Trust, 26.25 cents (Aug. 26). Another factor: Katanga copper is selling for 26.80 cents, c.i.f., New York.

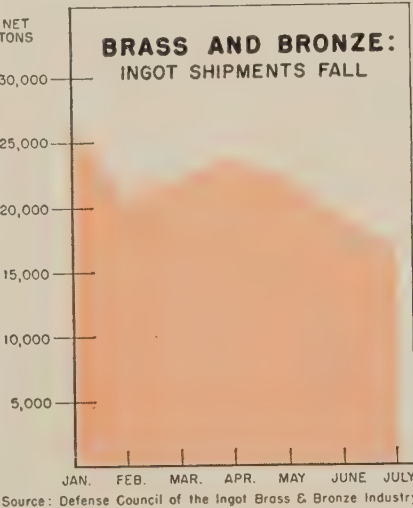
The culprit behind the metal's instability is too much production in the face of slack demand. Observers say there will have to be some drastic production cutbacks before the market will stabilize, but each producer seems hesitant to make the first move.

Carrousel—The industry is riding a merry-go-round that shows no signs of slowing down. Prices are dropped to stimulate buying, but each cut seems to make buyers more wary than ever of ordering substantial tonnages. An example: Custom smelters had no better sales at 27.25 cents than they did at 28.25 cents. That's why they went to 27 cents on Aug. 28—and some observers doubt that present demand will hold this.

Another phase of the price merry-go-round: Falling foreign quotations have a depressing effect on

the American market, and the weak domestic situation causes softness on the foreign scene.

Observers point out this latest weakness came at a time when there was some pickup in demand for primary. A few producers say



new orders remain a trifle better, but the slight pickup is not strong enough to stabilize the present price.

Lead, Zinc Firm

Lead and zinc appear more stable than copper. Lead sales have been improving steadily. Zinc is holding

its own. Both prices should hold for the moment, although predictions of both upward and downward adjustments are heard.

Congress' refusal to enact any tariff legislation hasn't weakened the market noticeably, although one metalsman believes this will hold back a price upswing temporarily.

Sales to diecasters continue good for most zinc producers. There are a few scattered reports of the construction industry taking more lead.

Lead sales to battery manufacturers so far have not been up to expectations. One battery company says this is because orders for 1958 model cars are a little slow coming in from Detroit, but it reports a sharp pickup is expected shortly.

Market Memos

- Cuban American Nickel Co., subsidiary of Freeport Sulphur Co., has arranged a \$100,250,000 loan to build a refinery at Port Nickel, La., near New Orleans. The plant will have an annual capacity of 50 million lb of nickel and 4.4 million lb of cobalt when it begins production in mid-1959.
- Shipments of magnesium castings came to 8773 tons in the first half, a drop of 277 tons from the 9050-ton figure registered in the same period of 1956, reports the Magnesium Association. Sand castings is the only category which shows an increase over last year.
- The auto industry will hike aluminum use in 1958 model cars by 15 per cent, predicts Reynolds Metals Co.

NONFERROUS PRICE RECORD

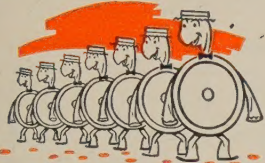
	Price Aug. 28	Last Change	Previous Price	July Avg	June Avg	Aug., 1956 Avg
Aluminum ..	28.10	Aug. 1, 1957	27.10	27.100	27.100	26.700
Copper	27.00-28.50	Aug. 28, 1957	27.25-28.50	28.822	30.250	39.750
Lead	13.80	June 11, 1957	14.80	13.800	14.120	15.800
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	34.694
Nickel	74.00	Dec. 8, 1956	64.50	74.000	74.000	64.500
Tin	93.50	Aug. 28, 1957	93.375	96.576	98.080	99.043
Zinc	10.00	July 1, 1957	10.50	10.000	10.840	13.500

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99 + %, deld.; MAGNESIUM, pig, 99.8%, Velasco, Tex.

BOY!

LYNCHBURG FOUNDRY SHELL CASTINGS

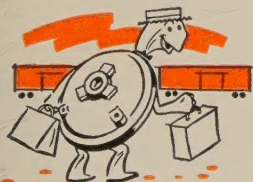
SAVE SAVE SAVE!



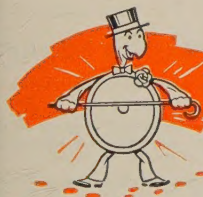
BETTER UNIFORMITY—They don't have to spend so much time getting ready to grind me, and my shell has a better chance of getting through the machine shop operation. Sometimes my shell has to be balanced, and greater uniformity saves on this operation too...



FASTER MACHINING—Fewer backaches! Close tolerances of dimensions makes for less machining—faster machining methods, or in some cases elimination of machining altogether.



READY FOR LIGHT TRAVEL—My Lynchburg dry shell surely makes for cheaper transportation fares—less machine stock saves me a "Light-Weight".

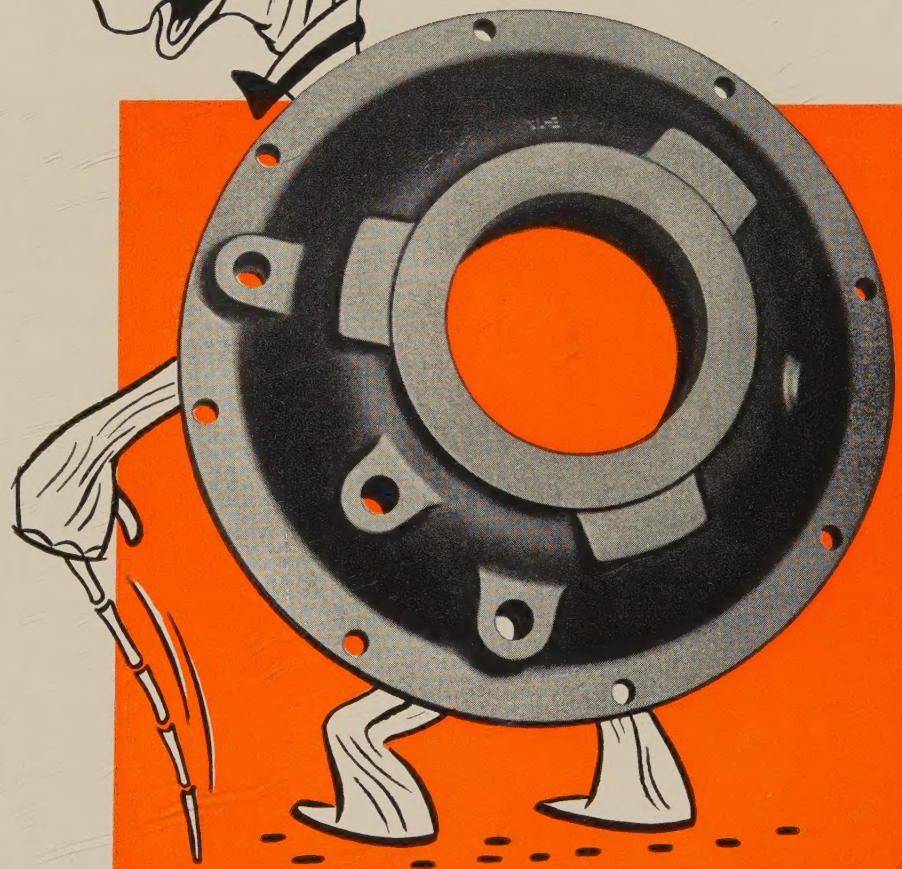


BETTER SURFACE FINISH—I call it "eye al"—I really feel sharp in my Lynchburg dry shell molded shell. Saves wear on my tools too.



GRAY IRON AND
DUCTILE IRON—

Heat treated
or as cast



You can't tell us turtles much about this shell game—we've been in it a long time—but I'd sure like for my whole family to hear about Lynchburg Foundry shell castings.

The snazzy outfit I'm wearing is called a gear box cover—shell molded, of course. You ought to have seen all the things that had to be done to an outfit like mine in the old days—before shell molding. But all that's changed—even the bolt holes around the edge are cast in. Then too, the pipe tap holes are cast so accurately that the drilling operation, which normally precedes the pipe tapping operation, is eliminated. And the machining that has to be done takes a lot less time—there's less machine stock, and the chucking lugs are cast so accurately.

As one shell man to another, take my advice—specify Lynchburg Foundry shell castings.

LYNCHBURG FOUNDRY CO., Lynchburg, Virginia

DISTRICT SALES OFFICES:

60 BROAD ST., NEW YORK, N.Y. • 122 SOUTH MICHIGAN AVE., CHICAGO, ILL. • 1783 E. 11TH ST., CLEVELAND, OHIO

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 26.00; ingots, 28.10, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 29.90; No. 43, 29.70; No. 195, 31.30; No. 241, 31.50; No. 356, 29.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 33.00; Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, \$71.50 per lb. f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, \$74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, \$43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: \$2.25 per lb, ton lots.

Cadmium: Sticks and bars, \$1.70 per lb deld.

Cobalt: 97-99%, \$2.00 per lb for 550-lb keg; \$2.02 per lb for 100-lb case; \$2.07 per lb under 100 lb.

Columbium: Powder, \$120 per lb, nom.

Copper: Electrolytic, 28.50 deld.; custom smelters, 27.00; lake, 28.50 deld.; fire refined, 28.25 deld.

Germanium: First reduction, \$179.17-197.31 per lb; intrinsic grade, \$197.31-220 per lb, depending on quantity.

Gold: U.S. Treasury, \$35 per oz.

Indium: 99.9%, \$2.25 per troy oz.

Iridium: \$100-110 nom. per troy oz.

Lead: Common, 13.80; chemical, 13.90; cor-rodling, 13.90, St. Louis, New York basis, add 0.20.

Lithium: 98+%, cups or ingots, \$11.50; rod, \$13.50; shot or wire, \$14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, \$250-252 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, \$9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: \$80-100 per troy oz, nom.

Palladium: \$21-22.50 per troy oz.

Platinum: \$81-87 per troy oz from refineries.

Radium: \$16-21.50 per mg radium content, depending on quantity.

Rhodium: \$118-125 per troy oz.

Ruthenium: \$45-55 per troy oz.

Selenium: \$10.50 per lb, commercial grade.

Silver: Open market, 90.625 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Rod, \$60 per lb; sheet, \$55, per lb.

Tellurium: \$1.65-1.75 per lb.

Thallium: \$12.50 per lb.

Tin: Straits, N. Y., spot, 93.50; prompt, 93.375.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.), \$2.25; grade A-2 (0.5% Fe max.), \$2.00 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, \$3.50 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+ % hydrogen reduced, \$4.10-4.20.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.35; special high grade, 11.75 deld. Die casting alloy ingot No. 3, 14.25; No. 2, 15.25; No. 5, 14.75 deld.

Zirconium: Sponge, commercial grade, \$5-10 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 24.25-30.25; No. 12 foundry alloy (No. 2 grade), 22.25-22.75; 5% silicon alloy, 0.60 Cu max., 25.50-26.00; 13 alloy, 0.60 Cu max., 25.50-26.00; 195 alloy, 25.25-26.75; 108 alloy, 22.75-23.00. Steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 24.00; grade 2, 22.25; grade 3, 21.25; grade 4, 19.75.

Brass Ingot: Red brass, No. 115, 28.75; tin bronze, No. 225, 38.00; No. 245, 32.75; high-leaded tin bronze, No. 305, 32.75; No. 1 yellow, No. 405, 23.50; manganese bronze, No. 421, 26.50.

Magnesium Alloy Ingot: AZ63A, 40.75; AZ91B, 37.25; AZ91C, 40.75; AZ92A, 40.75.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, \$1.84, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, \$1.82, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 33.855; l.c.l., 34.48. Weatherproof, 30,000-lb lots, 35.16; l.c.l., 35.91. Magnet wire deld., 15,000 lb or more, 41.93; l.c.l., 42.68.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, \$19.50 per cwt; pipe, full coils, \$19.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, \$9.50-15.95; sheared mill plate, \$8.00-11.50; wire, \$7.50-11.50; forging billets, \$6.00-7.60; hot-rolled and forged bars, \$6.15-7.90.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, \$12.50-19.20; H.R. strip, \$12.50-22.90; C.R. strip, \$15.00-31.25; forged or H.R. bars, \$11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel Monel	Inconel
Sheets, C.R.	126	128
Strip, C.R.	124	138
Plate, H.R.	120	121
Rod, Shapes, H.R.	107	109
Seamless Tubes	157	200

ALUMINUM

Sheets: 1100 and 3003 mill finish (30,000 lb base; freight allowed).

Thickness	Flat Sheet	Coiled Sheet
Range		
Inches		
0.249-0.136	43.10-47.60	....
0.135-0.096	43.60-48.70	40.50-41.10
0.095-0.077	44.30-50.50	40.60-41.30
0.076-0.061	44.90-52.80	40.80-42.00
0.060-0.048	45.60-55.10	41.40-43.10
0.047-0.038	46.20-57.90	41.90-44.50
0.037-0.030	46.60-62.90	42.30-46.30
0.029-0.024	47.20-54.70	42.60-47.00
0.023-0.019	48.20-58.10	43.70-45.40
0.018-0.017	49.00-55.40	44.30-46.00
0.016-0.015	49.90-56.30	45.10-46.80
0.014	50.90	46.10-47.80
0.013-0.012	52.10	46.80
0.011	53.10	48.00
0.010-0.0095	54.60	49.40
0.009-0.0085	55.90	50.90
0.008-0.0075	57.50	52.10
0.007	59.00	53.60
0.006	60.60	55.00

BRASS MILL PRICES

MILL PRODUCTS a				SCRAP ALLOWANCE			
Copper	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Yellow Brass	50.63b	47.86c	....	50.82	24.500	24.500	23.74
Low Brass, 80%	44.02	32.23d	44.56	46.93	18.375	18.125	16.63
Red Brass, 85%	46.70	46.64	47.24	49.51	20.750	20.500	20.04
Com. Bronze, 90%	47.64	47.58	48.18	50.45	21.500	21.250	20.74
Manganese Bronze	49.13	49.07	49.67	51.69	22.375	22.125	21.63
Muntz Metal	51.89	46.06	56.52	....	17.250	17.000	16.54
Naval Brass	46.29	42.10	....	....	17.250	17.000	16.54
Silicon Bronze	48.19	42.50	55.25	51.60	17.000	16.750	16.24
Nickel Silver, 10%	55.20	54.39	55.24	57.21e	24.000	23.750	23.04
Phos. Bronze, A-5%	60.41	62.74g	62.74	....	24.625	24.375	12.34
a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Lead	69.61	70.11	70.11	71.29	25.375	25.125	24.14

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths	Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.70	47.50	47.50
5050-F	43.80	48.60	48.60
3004-F	44.80	50.50	50.50
5052-F	45.40	51.20	51.20
6061-T6	46.90	53.00	53.00
2024-T4*	50.60	57.40	57.40
7075-T6*	58.40	66.00	66.00

*24-48 in. width or diam., 72-180 in. lengths

Screw Machine Stock: 30,000 lb base.	Diam. (in.) or across flats	Round—	Hexagonal—
2011-T3	2017-T4	2011-T3	2017-T4

Drawn	0.125	0.156-0.172	0.188	0.219-0.234	0.250-0.281	0.313	0.344
78.20	68.20	66.20	63.00	63.00	63.00	62.50	....
63.40	63.40	61.50	61.50	61.50	61.50	....	....
81.6	....	....	....	....	....	....	....
77.9	....	....	....	....	....	....	....
74.2	....	....	....	....	....	....	....

Cold-Finished	0.375-0.547	0.563-0.688	0.719-1.000	1.063	1.125-1.500
62.50	61.30	61.30	61.00	61.00	58.60
61.30	61.30	59.70	59.70	59.70	57.40
69.8	61.30	61.30	61.30	61.30	62.80
65.5	61.30	61.30	61.30	61.30	59.9
61.7	61.30	61.30	61.30	61.30	....
59.6	61.30	61.30	61.30	61.30	....
59.9	61.30	61.30	61.30	61.30	....

Rolled	1.563	1.625-2.000	2.125-2.500	2.563-3.375
57.00	56.30	54.80	53.20	51.70
55.70	54.90	53.40	51.70	....
57.5	54.90	53.40	51.70	....
....	54.90	53.40	51.70	....
....	54.90	53.40	51.70	....

Forging Stock: Round, Class 1, 45.20-58.00 in specific lengths, 36-144 in., diam. 0.375-8 in. Rectangles and squares, Class 1, 50.50-66.60 in random lengths, 0.375-4 in. thick, width 0.750-10 in.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)	Nom. Pipe Size (in.)		
%	2	\$19.40	\$59.40
1	4	30.50	165.00
1 1/4	6	41.30	296.00
1 1/2	8	49.40	445.00

Extruded Solid Shapes:	Alloy	Factor
6063-T5	6062-T6	60.60-64.00
45.40-47.00	61.30-65.00	61.30-65.00
45.70-47.20	62.50-67.00	62.50-67.00
45.90-47.90	64.50-70.00	64.50-70.00
46.50-48.30	....	....

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.1 in., 103.10; 0.81 in., 77.90; 125 in., 70.40; 1 in., 69.00; 250-2.0 in., 67.90. AZ31B sp grade, 0.032 in., 171.30; 0.81 in., 108.7; 1.25 in., 98.10; 1.88 in., 95.70; 250-2.0 in., 93.30. Thread plate, 1.88 in., 71.70; 250-2 in., 70.60. Tooling plates, 250-3.0 in., 73.40.

Extruded Solid Shapes:	Com. Grade (AZ31C)	Spec. Grade (AZ31E)
Factor	69.60-72.40	84.60-87.00
6-8	70.70-73.00	85.70-88.00
12-14	75.60-76.30	90.60-91.00
24-26	89.20-90.30	104.20-105.00
36-38	....	....

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.) Aluminum: 1100 clippings, 13.50-14.00; sheets, 10.00-10.50; borings and turnings, 6.00.

0; crankcases, 10.50-11.00; industrial cast-
ings, 10.50-11.00.

Copper and Brass: No. 1 heavy copper and
re, 20.50-21.00; No. 2 heavy copper and wire,
19.00-19.50; light copper, 17.00-17.50; No. 1
composition red brass, 18.50-19.00; No. 1 com-
position turnings, 18.00-18.50; yellow brass
turnings, 10.75-11.25; new brass clippings,
10.00-10.50; light brass, 10.50-11.00; heavy
yellow brass, 12.50-13.00; new brass rod ends,
15.00-15.50; auto radiators, unsweated, 13.50-
14.00; cocks and faucets, 14.50-15.00; brass
re, 15.50-16.00.

Lead: Heavy 9.50-10.00; battery plates,
5.4-5.50; linotype and stereotype, 11.50-12.00;
stereotype, 10.00-10.50; mixed babblitt, 11.00-
11.50.

Zinc: Clippings, 45.00-50.00; old sheets,
40.00-50.00; turnings, 35.00-40.00; rods, 45.00-
50.00.

Steel: Sheets and clips, 75.00-80.00; rolled
odes, 75.00-80.00; turnings, 55.00-60.00;
ends, 75.00-80.00.

Aluminum: Old zinc, 3.00-3.25; new diecast scrap,
5.5-6.00; old diecast scrap, 1.50-1.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 17.00-17.50; 3003
clippings, 17.00-17.50; 6151 clippings, 16.50-
17.00; 5052 clippings, 16.50-17.00; 2014 clip-
pings, 16.00-17.00; 2017 clippings, 16.00-17.00;
24 clippings, 16.00-17.00; mixed clippings,
15.00-16.00; old sheets, 13.50-14.00; old cast,
15.00-16.00; clean old cable (free of steel),
14.00-15.00; borings and turnings, 14.00-15.50.

Copper: Heavy scrap, 0.020-in. and
over, not less than 1.5% Be, 55.00; light
scrap, 50.00; turnings and borings, 35.00.

Copper and Brass: No. 1 heavy copper and
re, 22.50; No. 2 heavy copper and wire, 21.50;
light copper, 18.25; refinery brass
(90% copper) per dry copper content, 20.25.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 heavy copper and
re, 22.50; No. 2 heavy copper and wire, 21.50;
light copper, 18.25; No. 1 composition
clippings, 20.00; No. 1 composition solids, 20.50;
heavy yellow brass solids, 14.50; yellow brass
clippings, 13.50; radiators, 15.50.

PLATING MATERIALS

(f.o.b. shipping point, freight allowed on
quantities)

ANODES

Aluminum: Special or patented shapes, \$1.70
per lb.

Copper: Flat-rolled, 46.79; oval, 45.00, 5000-
10000 lb; electrodeposited, 38.75, 2000-5000
lots; cast, 39.25, 5000-10,000 quantities.

Steel: Depolarized, less than 100 lb, 114.25;
100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-
9999 lb, 105.25; 30,000 lb, 103.00. Carbonized,
about 3 cents a lb.

Aluminum: Bar or slab, less than 200 lb, 111.50; 200-
1000 lb, 110.00; 500-999 lb, 109.50; 1000 lb or
more, 109.00.

Aluminum: Balls, 17.50; flat tops, 17.50; flats,
17.50; ovals, 18.50, ton lots.

CHEMICALS

Aluminum Oxide: \$1.70 per lb in 100-lb drums.
Sulfuric Acid: 100 lb, 33.30; 500 lb, 32.80;
1000 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30.
Detroit.

Copper Cyanide: 100-200 lb, 74.80; 300-900
lb, 72.80.

Copper Sulphate: 100-1900 lb, 14.95; 2000-5900
lb, 12.95; 6000-11,900 lb, 12.70; 12,000-22,900
lb, 12.45; 23,000 lb or more, 11.95.

Mercuric Chloride: 100 lb, 48.50; 200 lb, 46.50;
500 lb, 45.50; 400 lb, 43.50; 5000 lb, 41.50;
10,000 lb, 40.50.

Mercuric Sulphate: 100 lb, 40.50; 200 lb, 38.50;
500 lb, 37.50; 400-4900 lb, 35.50; 5000-29,900
lb, 33.50; 30,000 lb or more, 32.50.

Aluminum Cyanide: 100 lb, 27.50; 200 lb, 25.80;
500 lb, 22.80; 1000 lb, 21.80; f.o.b. Detroit.

Aluminum Stannate: Less than 100 lb, 74.70; 100-
1000 lb, 65.80; 700-1900 lb, 63.00; 2000-9900 lb,
60.00; 10,000 lb or more, 59.80.

Stannous Chloride (anhydrous): Less than 25
lb, 164.10; 25 lb, 129.10; 100 lb, 114.10; 400
lb, 111.60; 5200-19,600 lb, 99.40; 20,000 lb or
more, 87.20.

Stannous Sulphate: Less than 50 lb, 126.90; 50
lb, 96.90; 100-1900 lb, 94.90; 2000 lb or more,
90.00.

Copper Cyanide: 100-200 lb, 59.00; 300-900 lb,
50.00.

(Concluded from Page 203)

ings and cast iron borings dropped
\$2 a ton to \$28-29.

St. Louis—Railroad and cast
scrap prices have dropped \$1 to
\$4 a ton. A corresponding drop
in heavy melting steel was fore-
cast at the close of last week.
The market has been weakened by
an increasing supply of material
coming in from industrial and rural
sources.

Birmingham — The market was
quiet last week. Consumers bought
only small tonnages; offerings
were restricted. Dealers are not
anxious to sell scrap because of
the slow movement of material into
yards. Major open-hearth consum-
ers remain out of the market.

The cast market is steady with
no price changes recorded. Some
consumers of cast are beginning
to drop out of the market.

Early in the week, one user of
electric furnace grades dropped
his price \$1 a ton on electric fur-
nace steel and electric furnace
bundles.

Seattle—The scrap market un-
derwent another \$2 decline last
week. Activity is restricted since
large buyers have substantial in-
ventories. The export situation is
extremely quiet.

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Experience in non-ferrous rolling mill op-
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man with Metallurgical background. Will
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a pioneer company in production of
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operate Hot Rolling, Cold Rolling, Finish
Rolling, Form Rolling, and possibly Extrusion
Press Equipment.

Replies will be held confidential. For further
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Luckey, Ohio

Attention of: Mr. R. Y. Heimsath,
Personnel Director

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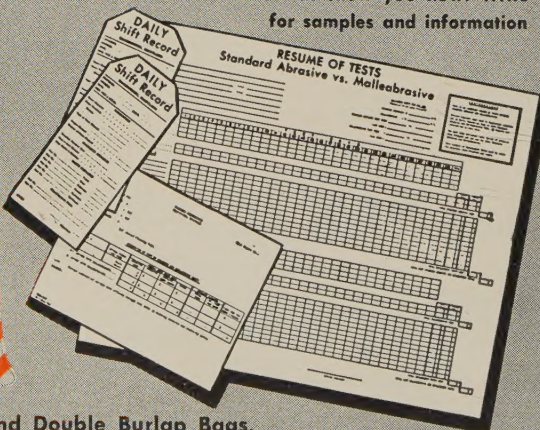
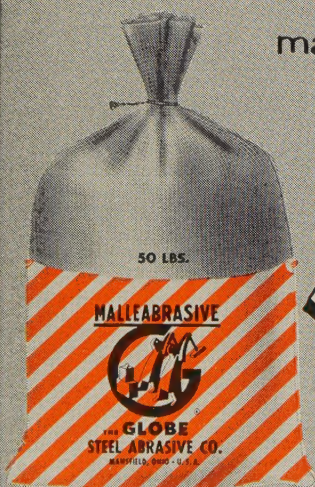
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Advertising Index

Acme Chain Corporation	1
Aetna Life Insurance Co.	
Ajax Electric Motor Corporation	2
Ajax Engineering Corporation	
Allegheny Ludlum Steel Corporation	1
Allied Research Products, Inc.	1
Alloy Metal Products, Inc.	1
Aluminium Limited Sales, Inc.	
American Brake Shoe Co., Electro-Alloys Division	1
American Brake Shoe Co., National Bearing Division	1
American Gas Association	
Arcos Corporation	186, 1
Armco Steel Corporation	
Armstrong Bros. Tool Co.	1
Armstrong Cork Co.	1
Associated Spring Corporation, Wallace Barnes Steel Division	
Avey Division, The Match & Merryweather Machinery Co.	30,
Babcock & Wilcox Co., The, Refractories Division	1
Baldwin-Lima-Hamilton Corporation, Standard Steel Works Division	
Barnes, Wallace, Steel Division, Associated Spring Corporation	
Basic, Inc.	
Bay State Abrasive Products Co.	
Bethlehem Steel Co.	1, 2
Binks Manufacturing Co.	1
Bliss, E. W., Co.	
Bossert Division, Rockwell Spring & Axle Co.	2
Browning, Victor R., & Co., Inc.	2
Bucyrus-Erie Co.	
Bullard Co., The	1
Carlson, G. O., Inc.	1
Cattie, Joseph P., & Brothers, Inc.	2
Cincinnati Shaper Co., The	14,
Clearing Machine Corporation Division of U. S. Industries, Inc.	1
Cleveland Cap Screw Co., The	1
Cleveland Hotel	1
Cleveland Worm & Gear Co., The	
Colorado Fuel & Iron Corporation, The	40,
Composite Forgings, Inc.	2
Cone Automatic Machine Co., Inc.	
Copperweld Steel Co., Steel Division	1
Copperweld Steel Co., Ohio Seamless Tube Division	
Corhart Refractories Co., Inc.	
Crucible Steel Casting Co.	
Crucible Steel Company of America	
Cutler-Hammer, Inc.	Back Co
De Laval Steam Turbine Co.	
DeVilbiss Co., The	116,
Diamond Mfg. Co.	
Diesel Chemical & Metal Co.	
Dover Corporation, Rotary Lift Co. Division	2
Duraloy Co., The	
Eaton Manufacturing Co., Dynamatic Division	
Edlund Machinery Co.	
Electric Controller & Mfg. Co., The, Division of The Square D Co.	Inside Front Co
Electro-Alloys Division, American Brake Shoe Co.	
Electro Metallurgical Co., Division of Union Carbide Corporation	
Ex-Cell-O Corporation	
Ex-Cell-O Corporation, Machinery Division	